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Address

THE THERAPEUTIC ART.*

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Many societies of internal medicine and many prominent clinicians believe therapeutics to be such an integral part of practice as not to require separate consideration or special study. We naturally take strong and positive exception to this belief, and it is my purpose to present the reason for the inauguration of special societies to discuss and to study this neglected branch of medicine.

The definition of therapeutics involves everything of importance to the patient. All the scientific physiology, etiology, and pathology of the world is of no use to him without their final practical application through the knowledge of therapeutics. I may illustrate this point by the following diagram:

Etiology produces Physiology is disturbed by The Pathology is the result of The Symptoms are indications of	The Disease=Treatment to	Stop the Etiology. Help the Physiology. Remove the Pathology. Ameliorate the Symptoms.

It is inane to say to this audience or to the profession that the patient cares nothing for what the physician calls the disease or how he arrives at his decision and diagnosis. To the patient it is only important whether or not the physician can aid in curing his disease and in relieving him of troublesome and imperative symptoms.

I do not think anyone will accuse me of an undue belief in symptomatic treatment, as each and every clinician well knows that it is only the consultant who can ignore the treatment of troublesome symptoms. All successful quackeries succeed because of their ability to relieve symptoms or to cause such mental suggestion as will relieve overtaxed minds, and many a loyal patient is driven to employ quackery by scientific neglect.

It is unnecessary to trace the study of therapeutics from the time of the votive tablets in the temples of the Asclepiadæ to the patriarch Hippocrates, through the anatomists Erasistratus and Herophilus, to the clinicians Celsus and Galen, through the Arabian Avicenna, back to Europe and the wonderful school of Salerno, then to England and Scotland, with their many "isms" and "methods," with the greatest brilliancy in Edinburgh, back to Germany to the practical chemical mystic Paracelsus, through the plodding Hoffmann and brilliant Stahl, to the wonderful Boerhaave, all illuminated by the grand anatomic studies presented by such men as Versalius, Fabricius, Eustachius, Fallopius, Bartholini, Varolius, Sylvius, and the illustrious Malpighi and Morgagni, aided by Cowper, Haver, Glisson, Reil, Harvey, and Brüner, through ever-increasing brilliant French surgery, back to solid English medicine represented by Sydenham, the Hunters, Bright, and the Irishmen Graves and Stokes; again to France for histology, and later to Bouchart, and still later to Pasteur; then to Germany for solidity of pathology, von Recklinghausen, Valdeyer and Virchow, the acme of bacteriology and neglect of therapy, to America for the grand association of all medical knowledge massed together in electric brilliancy, dimmed in places by the worst quackery the world has ever known, flashing in some places by wonderful scientific acumen, sputtering in others by gallery displays, ever urged on by American enterprise, smudged at times by overbearing egotism and self-aggrandizement, but ever advancing in ever-widening brilliancy, with here and there an arc light. All for what? For the advance of the prevention, treatment, and amelioration of disease, i. e., *therapeutics*.

Until recent years the treatment of disease was the most studied branch of medicine. It was first surrounded by mysticism of all kinds, but embodied, even in earlier times, management as well as the actual giving of drugs. All good results, however, were accredited to the ingested or applied remedy, and, like the "lack of sufficient faith" plea of the Christian Scientists for their unsuccessful cases, failure to cure in these times was ascribed to the special devil or special devilishness of the disease. Leaving this period of amulets, talismans, and elaborate mixtures of almost everything available, and the wonderful panaceas and cures by all kinds of mental impression, through the chemical age to the age of wonderful cures by multitudinous dilutions of nothing, and its wonderful success on the mind, we come to Majendi, the Nestor of physiologic investigation of drugs and to scientific medication.

The educated physician of to-day, thanks to the physiologists, the pathologists, the bacteriologists, and the pharmacologists, rarely speaks of "curing," but constantly of "managing" a disease. He leaves the word cure for practitioners of a dogma, for quacks and for nostrum venders. The management of a disease means the care of the diet, hygiene, climate, water, electricity if indicated, and the necessary drugs, and altogether it means "therapeutics."

The subject of therapeutics is the hardest of the practical subjects to master, and it is safe to say that the young graduate in medicine, even after a hospital course, is less prepared in the bedside management of disease than in any other branch of medicine. Hence, each medical school should have a special chair of

* President's address at the annual meeting of the American Therapeutic Society held in Philadelphia, 1905.

therapeutics held by a clinical man, a specialist in internal medicine. It has been demonstrated that the professor of practice can not spend the necessary amount of time on therapeutics, as his time is completely filled with applied pathology, symptomatology, diagnosis, and the demonstration of signs of disease at the hospital bedside or in the dispensary clinic. In these hospital and dispensary cases, the treatment necessarily is much restricted to general routine and to formulary preparations; the patient is not individualized, and other therapeutic measures are not often available, especially in dispensary cases. The students rarely learn in this manner fine individualized scientific therapy for private practice. In the hospital, the diet, bathing, electricity, massage, drugs and preparations are always given and used according to some one rule which can not well be varied in these institutions to suit an individual taste or need. The graduate, and even the postgraduate, thus starts to practice medicine in his own office very narrowly equipped therapeutically. He has no resources if his first dogmatic treatment has failed or has not been suited to the patient. It may be contended that he then can read up his therapeutics. Yes, but everyone knows how unsatisfactory that is.

Many, indeed most, books on materia medica contain whole individual theses on each drug, and the reader is convinced after reading one of these articles that that particular drug is the most important one in the pharmacopeia and that it is good for everything. He reads up the next drug, and lo! he finds that drug to do the same, and that Dr. So-and-so of European prominence has found it of wonderful value in this very disease concerning which the reader is seeking information. But neither the European referee nor the author of the materia medica tells how this drug should be administered in this condition, the dose, the frequency, or the preparation to be used. The reader then looks for the preparations of the drug and selects the tincture with a dose ranging from five to thirty drops, too indefinite to be of value, for who shall say that he can not give more to obtain results? Then he re-reads the pharmacologic action to see what is the first symptom to show that the drug has reached its safe limit of use, and behold, the book does not tell what action to look for first. Then he looks through several books to find how the tincture will taste, and learns that it is intensely bitter and acrid. He also refers to the pharmacopeia to ascertain with what it is incompatible while seeking some way to make it palatable. He then bethinks himself of the dispensatory, which tells him that the drug is rarely now used. He then reads two or three books on practice on this disease which he is now studying, and finds his most trusted author tells him this drug was lauded by the European referee some years ago, but that in his hands it has failed utterly. The young physician then goes to his druggist and asks for some of this particular tincture, and the druggist says that he can not remember when he had a call for it, but thinks it may be somewhere on a top shelf. He finds it, blows the dust from the bottle, and then the question is, how can it best be given? The druggist says it is very incompatible and can only be diluted in a certain manner. This is discussed, the prescription written, memorized, and later written at the patient's house and the family is told to have it filled at this particular druggist's, "as others may not have it." The next day the patient says, "Doctor, that new medicine ought to do some good, as it is positively the worst stuff you have ever given me."

Is it any wonder that the young educated practitioner as well as the uneducated one listens to the dulcet tones of the pharmaceutical drummer? The pharmaceutical visitor presents "something new, palatable, it will not interfere with digestion, does not dissolve until it gets into the intestine, has replaced the old depressant, is used by such good men as Dr. X, Dr. Y, and Dr. Z, is all ready for administration, can be ordered in such quantities as you desire, its dose is so much, its only limit in administration would be such a symptom, and it is almost a specific for that disease (the very one the young physician is investigating), and here is the sample."

It is not because each and every practitioner desires to put gain into some pharmaceutical firm's pocket, it is not because each druggist wishes to load his shelves with pharmaceutical and patented preparations that these firms and their preparations are constantly multiplying, but because not enough time is spent in the study of therapeutics in the undergraduate and postgraduate medical schools.

Now, how can this be remedied? As before stated, by a special chair of therapeutics, and the holder of the chair should be well versed in the science of pharmacology, but not necessarily in the laboratory side of it. In fact, the department of laboratory pharmacology should be taught by a purely scientific man and the therapeutic application by a purely practical man, though these two courses should be so interwoven as to constitute one department, a sort of factory of the crude material to the finished product.

Good therapeutics is to the thoroughly equipped physician what the armament is to a war vessel. With the best of methods some students will graduate as protected cruisers only, others as armored cruisers, and others as fully armed battleships, depending on the plan on which the model is made and on the material used in the early construction, but a well-equipped medical school should be able to produce the best medical battleships even if monitors or torpedo boats only are often ordered.

There are various methods of beginning and of completing the therapeutic armament of the medical student, and I will present one which, of course, can be improved on as the plant grows.

An experimental pharmacologic laboratory course should begin early in the second year, after anatomy, histology, physiology and chemistry have been nearly, or quite, mastered. This course should consist of experiments on animals with the most important drugs that are representative of certain pharmacologic actions, such as digitalis for the cardiac tonic group, atropin for the belladonna group, alcohol for the stimulant-excitant group, strychnin for spinal excitant action, chloral for depressant action, ether, chloroform, curare, cocain, pilocarpin, suprarenal extract, ergot, and perhaps others, each graphically demonstrating positive actions on organs, secretions, and nerve functions.

At these experiments, the students should be divided into groups of four or five, each group in turn to be active assistants at the experiments. One student should take notes of conditions as dictated by the instructor, and all should carefully later describe the experiment in their notebooks. At the end of the year these notebooks should be handed to the instructor for his criticism, and the attendance at these experiments

and the thoroughness of the written picture should count as a component part of the student's preparation or non-preparation for advance to the third, or junior, year. During this year the students are quizzed on these laboratory experiments.

In the latter half of this second year, a series of twenty-five lectures are given on toxicology. These are largely experimental demonstrations of the effects of poisons on animals and of the controlling power of antidotes, with also graphic demonstrations of poisonous and non-poisonous doses of strong drugs, and what is meant by tolerance. Many medicolegal aspects of poisons which may be of value to the medical man are not only discussed but demonstrated. Notebooks describing these experiments must be kept by the students, and must be handed to the instructor for criticism and marking.

In the last third of this second year, a series of twelve laboratory lectures on pharmacy are given. At these lectures a type of each of the pharmacopeial groups is prepared, and all the various methods of administering drugs are described; also, the meaning of chemical and pharmacal incompatibility is demonstrated. Quizzes follow, and the students must take notes and hand in their notebooks to the instructor for criticism. It has been demonstrated to my satisfaction that this method, combined with what follows, is better for the medical student than a bench pharmacy course.

As soon as this pharmacy course is completed, the introduction to materia medica and prescription writing is begun. Pharmacopeial preparations are discussed, with the advantages of each, and the general rules for doses and dosage are studied. It is taught that no dose is too small to administer if the physician so desires, and the only maximum dose is when the desired physiologic action has been obtained. Hence, to this end the doses of all pharmacopeial classes are put down as that from which some slight non-poisonous but positive effect is to be expected. All preparations are divided into weak and strong, then subdivided into poisonous and non-poisonous, and the doses are thus not difficult to remember. For instance, the tincture of digitalis is a strong preparation of a poisonous drug, and the dose must be a few drops.

Next, the crude drugs are demonstrated in therapeutic classes, in my opinion the only classification of value to the student. I do not believe in chemical, physiologic, atomic, alkaloidal, or any other scientific classification, as they are of no practical use to the practitioner and are remembered only long enough to pass an examination. A classification of drugs is almost hopeless by any method, and is not attempted by some authors, who name them alphabetically. I believe, however, that some classification is advisable, and that which will be of use to the future physician is the best, viz., a therapeutic classification, in which all the drugs that are used to produce a certain therapeutic result are grouped together. For instance, if digitalis does not act well, the young practitioner will immediately remember strophanthus, cactus, convallaria, sparteïn, caffein, etc. Idiosyncrasy and tolerance are carefully discussed, and prescription writing is begun by personal blackboard instruction, the class benefiting by the corrected individual mistakes.

At the end of this second year a written examination is held, including questions on all materia medica and pharmacologic work done during the year. If the student passes, he enters on his third year in medicine, not a therapeutic nihilist, but well understanding the potency of drugs and able and willing, therefore, to use them with respect.

During the summer vacation, before the beginning of the third year, each student is required to spend fifty hours in the prescription department of some drug store. He thus acquires a definite idea of the appearance, weight, and cost of the various drugs and preparations, learns how to make pills, capsules, ointments, tinctures, etc., and becomes a witness of incompatibilities and incorrect dosage. He sees how readily the druggist can determine whether or not a physician has made a diagnosis, and what is meant by the "gunshot" prescription of the groping physician and the polypharmacy of the physician ignorant of therapy.

At the beginning of the third or junior year the student comes to the study of detailed pharmacology, or the physiologic action of drugs, well prepared and better equipped than most of us were when we graduated. He now, three hours a week for two-thirds of this year, has recitations and explanatory talks on a pharmacologic text-book that gives the physiologic action in groups, i. e., describes in detail the most important drugs, and hangs the other drugs of this class on this hook, briefly stating slight differences in action and use. A materia medica that gives a thesis on each and every drug is not a good one for teaching purposes, though it may be very valuable for reference.

The last third of this year is devoted to lectures on hypodermic medication, rectal injections, transfusions, inunctions, inhalations, plasters, wet dressings, hot and cold applications, hydrotherapy, electricity, massage, organic extracts, diet, climatology, mineral springs, etc. During all this year blackboard work on prescription writing is continued daily. Chemical, pharmacal, and physiologic incompatibilities, mistakes in dosage, polypharmacy, bad treatment and bad Latin are weekly demonstrated by clipped prescriptions from the formulary department of some of our best medical journals. These are written on the blackboard and the students are asked to criticise them. Students so instructed will never depend on the formulary of journals for their therapy.

Toward the end of this year, lectures are given on the history of medicine from the earliest times to the present day, the advance of scientific therapy being specially noted. These students, if they pass their written examination at the end of the year, are then ready for instruction in the applied therapy of the fourth or senior year.

The study of therapeutics of this fourth year is continued by lectures on the management of the various diseases. In these lectures the physiology of the part affected is reviewed, the pathology of the disease is briefly recalled, the symptomatology is referred to as indicative of the degree to which the pathology has advanced and of the amount of the disturbance of the physiology. The etiology is then discussed, and the decks are cleared for the proper understanding of the therapy, namely, to remove the cause of the disease if possible, to correct, or at least not to interfere with, physiology, to remove if possible the pathology, to keep up nutrition, to assist elimination and other normal functions, to give a specific if there is such, to remove or to ameliorate troublesome symptoms, if possible by non-medicinal methods, but if must be with such drugs as by their physiologic action best combat the symptoms.

If drugs are advised, the best preparations, the best method of administration, and the beginning doses are carefully pointed out. It is also emphasized that if a dangerous condition can perhaps be overcome by a strong drug used fearlessly but thoughtfully, it should be used, as a surgeon uses his knife, to save, if possible, a desperate case. The management of convalescence and of incurable diseases is carefully mapped out.

Throughout this senior year two clinical lectures a week are given at which the symptoms and signs of disease are carefully noted and written down, and the most rational possible treatment then given. The patient, on his return to the clinic a week later, is particularly questioned as to each detail of his previous history, and the results of the treatment are written down opposite the treatment given on his previous visit. This graphically shows the mistakes in diagnosis, mistakes in judgment, in the choice of drugs, dose, or management, as well as the success of treatment. Also, reference to the probable prognosis written down at the first visit shows how much was expected of the treatment. The senior students all through this year act as clinical assistants in the dispensary, taking histories and writing prescriptions under dictation.

At the end of this year, after passing a written examination on therapeutics, it would seem that the graduate should know something of this subject.

All this instruction should be under the management of the professor of materia medica and therapeutics, and thus all can be amalgamated into one progressive homogeneous course.

That this ability to practice the art of therapeutics as we understand it need not be lost after graduation, hospitals should more especially individualize their medical cases and should avoid the use of cut-and-dried formulas as much as possible.

Hospitals are preventing the establishment of the metric system almost as fast as the medical schools are inaugurating it. They should use the easy decimal system; translations from one system to the other are hopeless.

Postgraduate schools are more and more meeting the demand of their students that more time be spent on therapeutics, and hence we need not urge them to emphasize this branch of medical need.

Lastly, the therapeutic societies have come to stay, and the greater the number established the more rapid the advance in this neglected science. It is absurd for societies and sections devoted to the practice of medicine to declare that therapeutics is a branch and part of medicine. No one denies it, but for the last twenty years it has been a neglected part, and it should now be given special study and special discussion. Where would the practical societies stand without the work of the pathologists? On the other hand, how helpless would the trained diagnostician be, how would the patient fare, without the work of the pharmacologist and the study of rational therapy? Societies devoted to the study of therapeutics will do much to prevent the phrase "how do you treat pneumonia?" and abolish the ridiculous, often absurd, often dangerous advice given in the medieval formulary departments of our medical journals. Some of the worst errors in prescriptions are copied from journal to journal because some man of renown was supposed to have some time recommended that particular prescription, though he may not be guilty of the mistakes in it.

Original Articles

THE THERAPEUTIC USE OF *X*-RAYS.

THREE YEARS AFTER.*

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CHICAGO.

In March, 1900,[1] in November, 1900,[2] and in February, 1902,[3] I read papers before this society on the therapeutic use of *x*-rays. The first paper was a consideration of their use in skin diseases; the second, a report and a demonstration of lupus successfully treated with *x*-rays; the third, a report and a demonstration of a number of cases of various kinds showing the results of exposures to *x*-rays. The cases reported included lupus, epithelioma, senile keratosis, recurrent carcinoma of the breast, deep-seated carcinoma of the head and neck, sarcoma, keloid, pseudoleukemia and leukemia. In another report[4] the use of this agent in various forms of dermatoses was considered. Three years now have passed since the last of these reports, and I venture to hope that it will not be unprofitable nor without interest to review the subject and to undertake to estimate from the results the therapeutic limitations and possibilities of this agent. I fear this paper will appear unduly personal, since I am only undertaking to review my own experience, but for this I offer the apology that one's personal experience is that which he can best review. I hope it will not seem that I am overlooking the work of the many men who have made valuable contributions to the subjects on which I am giving my own experience.

So far as the use of *x*-rays in cutaneous diseases is concerned, that can be quickly summarized, for there is pretty general unanimity in the experience of dermatologists.

HYPERTRICHOSIS.

The use of the *x*-rays for the permanent removal of hair has not equaled my early expectations. In my experience I should say that they have given satisfactory results in about 50 per cent. of the cases treated, but to get these results has required long and painstaking treatment, and in some cases even this has failed. This application is so beset with difficulties that I do not undertake it unless the conditions are very urgent. Hypertrichosis is the one condition in which my experience with *x*-rays has been less satisfactory than I anticipated.

SYCOSIS AND TINEA.

In sycosis and tinea sycosis the results with *x*-rays are exceedingly satisfactory and in some intractable cases they give results that are obtainable by no other method. The results are permanent. Some of my cases have been well more than three years.

ACNE.

In my experience acne offers one of the best illustrations of the value of *x*-rays. It is little short of marvelous to see the improvement produced in most obstinate acnes from careful *x*-ray exposures. I have treated a large number of acnes by *x*-rays, and the results in most cases have been good. I have occasionally had results that were not completely successful, even after long-

* Read before Chicago Medical Society.
1. Journal of Cut. and Genito-Urinary Dis., July, 1900.
2. THE JOURNAL A. M. A., Dec. 8, 1900.
3. Ibid., April 12, 1902.
4. American Dermatological Association, May 31, 1901.

continued treatment, these partial failures being attributable, I believe, to failure to get enough *x*-ray effect, but I believe I can say that I have never failed to see an improvement take place after a reasonably long period of treatment, and in many cases I have seen results which no other method can approximate.

As to the permanency of the results, the patient may occasionally have the recurrence of a lesion, but in some cases not even this has taken place. When relapses have occurred, they have shown themselves easily amenable to treatment. The results are attributable, I believe, chiefly to the decrease in the activity and size of the sebaceous glands produced by the *x*-rays. In these cases of acne, the gaping follicles decrease in size, comedones disappear, oiliness is diminished, and the appearance and texture of the skin are greatly improved. In many cases the improvement is quite remarkable.

Of course, the application of *x*-rays for acne has to be carried out with great care, and it should not be undertaken until the operator knows with reasonable assurance the *x*-ray effect he is going to produce by his exposures. The objection to this method is that, if one proceeds safely, the treatment extends over a considerable period of time, perhaps several months. Unfavorable after-effects on the skin, which have been urged as a possible danger here, I have not seen, and I believe the treatment can be carried out without any danger, immediate or remote.

The favorable results in acne I have seen in all types of the disease; in simple juvenile acnes in healthy subjects and in the most deep-seated indurated acnes in patients who are out of health. Of course, the method has its greatest usefulness in the deep-seated, severe and otherwise intractable cases of acne indurata.

ROSACEA.

In rosacea the results have been quite as satisfactory as in acne. Not only can the folliculitis be controlled, but in some of my cases I have been surprised to see the nose become of normal color and contour again; and, what was more surprising, dilated blood vessels disappear. These cases show only a very slight tendency to relapse; in some cases that I have had under long observation and treatment the results have been permanent. I had one case of as ugly rosacea as one often meets, which has been practically well for three years, and without any treatment has not had a relapse in the last two years.

HYPERIDROSIS.

From the effect of *x*-rays on the appendages of the skin I suggested[4] the theoretical possibility of the value of *x*-rays in the treatment of excessive localized sweating. The value of the agent in this connection has been confirmed by the experience of several operators.

INFLAMMATORY DERMATOSES.

The use of *x*-rays in chronic inflammatory dermatoses has proved of much value. In chronic indurated eczema, my experience, like that of numerous others, testifies to their value. They have been particularly useful in the chronic intractable eczemas of the hands. I have also had satisfactory results from their use in chronic indurated eczema of other parts and in acute exacerbations of old eczemas. Their effect in relieving itching in these cases is frequently quite marked, but sometimes fails. Their effect is not limited to the relief of itching, but there is a positive influence on the metabolism of the affected tissues that frequently causes the complete disappearance of the disease. I have also seen the rays fail to produce any appreciable effect on some cases of eczema. I have in mind particularly two cases of that distressing form of eczema of the face, which we call neurotic, that is seen occasionally in people beyond middle life. The only two cases of this sort that I have had the opportunity of treating thoroughly with *x*-rays have proved totally rebellious to them, as they have to everything else.

In the subacute or chronic inflammatory diseases of the skin, accompanied by a good deal of scaling, such as psoriasis and lichen planus, the effect of the rays is very beneficial. Their application is free from the disagreeable circumstances of the usual local treatment of these conditions, and in some cases they do more than can be done by other means. But here their value is not unique, for we have other satisfactory methods of treating these conditions.

LUPUS ERYTHEMATOSUS.

The results in lupus erythematosus do not show that *x*-rays furnish the much-needed effective method of treating that extremely uncertain affection. Decided improvement may take place from their use, but one can offer no assurance of a satisfactory result. They are inferior, in my experience, to the application of the high-frequency current.

PRURITUS.

In pruritus ani and vulvæ I have seen the benefit from the use of *x*-rays that other observers have reported. The temporary relief of itching has been very common in my experience, but I am not sure that any case has been permanently cured. The relief that can be given to these miserable sufferers, however, fully warrants the use of the treatment. In the indurated dermatitis that frequently accompanies these cases, I have seen the same improvement as in eczemas of similar type elsewhere.

PIGMENTED AND VASCULAR NEVI.

In both pigmented and flat vascular nevi my experience with a few cases has led me to believe that *x*-rays offer a method of treatment of distinct value. The most satisfactory result in pigmented nevi has been in the case of the daughter of a physician who had a hairy, pigmented nevus, involving the entire right side of the forehead and temple from the eyebrow to the scalp. The skin was black, had a thick, horny layer, and was covered with a growth of black hair, quite as heavy as that on the scalp, with which it was continuous. By careful treatment all the hair was removed and the skin of the surface made almost normal in appearance. It is slightly darker than the adjacent skin, but is smooth and soft and of good color. We succeeded in this case in getting an eyebrow and a hairy border of the scalp of normal contour, so that practically the deformity was entirely obliterated. This patient has now been well for two and one-half years. I am sure that such a result could not have been obtained by any other method. In a few other cases I have been able almost to obliterate similar but smaller nevi.

In the only two vascular nevi I have treated I have been able to cause improvement which was satisfactory to the patients. In neither of these cases has the red color been entirely removed, but it has been converted from a dark conspicuous red to a light, pinkish color that is very much less obtrusive; and in doing this the texture of the skin has been improved, so that the skin

over the surface of the nevus is smooth and soft. There can be no doubt of the positive improvement in these cases, because small outlying areas that were left as checks to determine accurately any change of color remained much darker. I do not mean to suggest *x*-rays as a method entirely satisfactory in these cases, but until some more satisfactory method of treating them is devised than we now have I believe this method has here a field of usefulness.

KELOID AND SCARS.

In my demonstration three years ago I showed a case in which a large keloid on the arm had been made to disappear under *x*-ray treatment. There had been no recurrence of this keloid two years after, when I last saw the patient. I have treated successfully several typical keloids, most of them on the chests of women. The keloids flattened down into soft, pliable, white scars, and the pain which exists in some of them completely disappears. Such cases seem to leave no room for doubt that keloid can be cured by this method—which, I believe, is more than can be said for any other. *X*-rays also offer an eligible method of treatment of other bandlike scars.

LUPUS VULGARIS.

There is unanimity of opinion among dermatologists as to the value of *x*-rays in lupus vulgaris, and my experience corroborates this. I have seen but one case of lupus vulgaris which failed to yield satisfactorily to the rays, and that was a case of lupus of the face extending deep into the tissues, which had recurred after a plastic operation. In my experience, lupus has yielded readily to *x*-rays, and when the treatment could be carried out satisfactorily the results have been all that could be hoped for. As to the permanency of the results, the patients whom I showed symptomatically cured at the meeting of this society four years and three years ago have had no recurrences. I have had some failures in lupus vulgaris, but they were failures which, I believe, may be reasonably attributed to the fact that it was impossible, on account of the patients, to carry out the treatments satisfactorily.

There is surely no other method of treating lupus vulgaris that stands in the same class with *x*-rays, except Finsen's method. The results from Finsen's method are as good, but I believe, even in my limited experience with lupus vulgaris, that I can duplicate any of the results of Finsen's method. *X*-rays have certain very decided advantages over Finsen's method. The results are more rapidly obtained; the treatment is applicable to mucous membranes; it will reach lesions much more deeply situated; it does not require the aid of supplementary painful, mechanical or caustic methods of treatment; there is no discomfort from the application of pressure to the surface to drive out blood; and the treatment can be applied at one sitting to large areas, while in Finsen's method it is impossible to treat more than about one square centimeter of diseased tissue at one time. I have treated some cases of widely disseminated and very extensive lupus in which treatment by Finsen's method would have been unending.

TUBERCULAR GLANDS.

I have had a somewhat extensive experience in the treatment of tubercular glands, especially those in the neck. My experience has been variable. In the treatment of primary cervical adenitis without involvement of the skin, in many cases I have been able to reduce the size of the glands and by long-continued treatment to cause them to decrease to the point of disappearance. In other cases, however, there has not been much improvement. In the treatment of cervical adenitis, in which there was already involvement of the skin, my results have been more positive. In nearly all cases it has been possible to cause healing of the sinuses and distinct improvement in the condition. A case referred to me three years ago by Dr. A. J. Ochsner, which is about the most severe of this sort that I have treated, illustrates the extent of the results that can be obtained. This patient had had repeated operations, extending over several years, for tubercular glands on both sides of the neck and in both axillæ. Operation after operation had been done until all the tissue that could be spared had been taken out. The disease, however, had recurred in all four localities. There were numerous sinuses and the skin and the subcutaneous tissue were thickened and indurated and unhealthy. Under *x*-ray treatment given twice a week for three months the sinuses all healed, the tissues became healthy, and she has remained well now for three years, practically without further treatment.

TUBERCULAR JOINTS.

My experience in tubercular joints has not been extensive. In some cases the rays have not appreciably affected the condition. In a few cases, however, there seems to be little doubt of very positive benefit. I have treated a very severe case of this sort during the last year for Dr. J. B. Murphy. In this patient, a young man, there were tubercular lesions of many joints—the feet, the ankles, the knees, the wrists—some of them with involvement of the skin, some of them without. Under *x*-ray exposures nearly all the discharging lesions have healed, the patient has become so that he can use his joints without pain, the swelling has very greatly decreased and he has gained forty pounds in weight. From being an invalid on crutches and almost completely confined to bed he has got on his feet again, is able to exercise without discomfort, and has been able to go to New Mexico alone to spend the winter. How much of this is due to *x*-rays may be open to question, but it is certain that during the time that he was subjected to the exposures his condition vastly improved without change in his surroundings or in his other treatment.

ABDOMINAL TUBERCULOSIS.

In one case of abdominal tuberculosis, which I have treated during the last two years in conjunction with a surgeon of Chicago, there has been improvement, which has been attributed by the surgeon very largely to *x*-rays. In his opinion, I believe, it rendered possible an operation for the relief of an intestinal obstruction, which has been followed by great improvement of the patient. I have no other cases of this sort that have had extended treatment, but on theoretical grounds and from my small experience I believe the method is worthy of careful trial, not, however, at the expense of omitting other means for combating the condition.

DEEP SINUS.

I have treated numerous deep sinuses of various sorts with *x*-rays, usually without radical relief. In one abdominal sinus, however, the result was surprising. This was in a young woman, in whom a laparotomy had been done for pelvic abscess. A sinus resulted which resisted all attempts at relief. When she came under treatment she had a sinus between the umbilicus and the pubis, from which there was a very

abundant discharge of foul pus. She was weak and greatly emaciated. Under *x*-ray exposures, extending over a period of four months, there was a rapid diminution in the discharge until it entirely disappeared, and a month after stopping treatment, in June, 1903, the sinus permanently healed. The patient, a woman of large frame, gained fifty pounds in the next few months.

BLASTOMYCOSIS.

In blastomycosis my experience with *x*-rays, extending over a half-dozen cases, has been uniformly favorable. The results have been radical in all except one case, in which the patient would not continue treatment. In all of the cases *x*-ray treatment has been combined with potassium iodid in from 10 to 20 grain doses, *t. i. d.*, and my experience leads me to agree with others that the use of *x*-rays in combination with potassium iodid offers an ideal method of treating cutaneous blastomycosis. In addition to the treatment of demonstrated cases of blastomycosis I have treated successfully by this method two large suppurating, papillomatous tumors, one over the knee, one on the thigh. Both patients were women and both lesions had resisted for at least two years other methods of treatment. The first of these patients, a middle-aged woman, was on crutches and the condition was serious enough to warrant the consideration of amputation of the leg. The use of the leg was entirely regained and there has been no recurrence in two and one-half years.

ACTINOMYCOSIS.

My experience in actinomycosis has been confined to one case in the jaw, in which ulceration had not occurred and the diagnosis was clinical. The patient was referred to me by Dr. A. J. Ochsner. In this case *x*-ray exposures, combined with 20 grains of potassium iodid, *t. i. d.*, was followed by complete and permanent resolution in a few weeks.

I have another case in which the diagnosis lay between actinomycosis and sarcoma, in which the result was remarkable. This patient was referred to me by Dr. L. L. McArthur in September, 1902. Six months previously the patient had noticed a painful tumor in the left side of the breast which at first grew slowly, but then rapidly extended. At the time he was referred to me there was a large tumor occupying the whole front of the chest between the axillary lines and from the lower end of the sternum to the clavicles. It was densely hard, immovable, of purplish color, and involved the skin. Over the center the tumor showed a few small ulcerating points. There were indurated glands in both axillæ. In Dr. McArthur's opinion, it was a case of sarcoma, and the patient had had a piece of tissue excised at the hospital for microscopic examination. After it was too late to get another specimen it was discovered that this was lost, and the diagnosis was never confirmed microscopically. In a little over a month of *x*-ray exposures this mass, which was over a foot in diameter and three inches thick at the center, completely disappeared and with it the axillary glands. He had no other treatment besides *x*-rays. His cachexia disappeared and his health was completely restored so that he was able to return to hard labor. There has been no recurrence, now in over two years. I have seen nothing in the use of *x*-rays more striking than the result in this case.

CUTANEOUS CARCINOMA.

My experience with epitheliomas now covers a large number of cases, including lesions of all descriptions, from the smallest epitheliomas to larger lesions than I have seen anywhere described, and the results which have been obtained have given me the utmost confidence in the use of the *x*-rays in this condition. I am almost prepared to say that I believe that any cutaneous carcinoma can be cured with *x*-rays. When I say cutaneous carcinoma I mean to exclude metastases or extensions deep into the underlying structures; but this exclusion does not limit the application of this method to cases that are easily amenable to surgical methods, because there are still left certain lesions which from their extent are beyond surgical intervention, and numerous other lesions in which surgical treatment is unsatisfactory or undesirable, if not impossible. As to the class of epitheliomas which are suitable for *x*-ray exposures, I believe it may be said broadly that all epitheliomas are suitable for this method of treatment except those cases in which conservative surgery requires the removal of contiguous glands. For epitheliomas in certain localities the *x*-rays offer particular advantages on account of the favorable character of scars that result. This applies especially to epitheliomas on the nose, of which I have had many cases, to epitheliomas on the ears, of which I have had several cases, and especially to epitheliomas on the eyelids.

I have treated by this method several cases of epithelioma on the lower lid in which there was no involvement of the deeper tissues of the orbit, and in all of these, except one in which the patient would not allow sufficient treatment, a successful result has been obtained without interfering with the function of the lid or in any way affecting the eye. The unsuccessful case shows improvement that has remained permanent for two years. There has not been any relapse in any of the others and one has been well two and a half years.

Among my cases of epithelioma on the nose are a few successful cases of very extensive epitheliomas, involving the tip and the alæ of the nose and the contiguous parts of the cheek, which had failed of relief from operation or in which surgery offered no prospect of relief except by extensive and very mutilating operations. One of these cases is among those I demonstrated three years ago symptomatically cured, and this patient remains well now.

There is a type of epithelioma of the nose which we fortunately see rarely, which is situated deep in the tissues and is of very rapid growth. When patients with this type of lesion come under observation the nose is usually almost completely destroyed. There are large nodular masses at the border which melt away rapidly with great destruction of the tissues. I mention this type of lesion because in two cases of this sort that I have seen, one of which, I thought, had adequate treatment, *x*-rays did not materially check the course of the disease. Likewise, I have failed of successful results in several extensive carcinomas of the orbit. I refer now to the very destructive lesions which we sometimes see that involve the whole orbit and in time leave an enormous cavity. Very great improvement can be made in these cases and the course of the disease can be almost completely checked, but I have not seen radical relief. I have had one very interesting case of this sort in a middle-aged man who had only one eye and had a carcinoma involving that one. The carcinoma had extended from the inner canthus deep into the orbit and involved the contiguous bony structures. This patient has been under my care at intervals for two years. A year ago Dr. Casey Wood, at my sugges-

tion, removed as much of the carcinoma as was possible without destroying the eye, and during the two years I have given him *x*-ray treatment as vigorously as possible. There has been no superficial ulceration and, in view of the previous history of rapid growth and the course of such cases ordinarily, there seems to be no doubt that in this case we have succeeded in preserving for him a useful eye for two years. How much longer this result may be maintained I do not know, but he is apparently in as good condition now as he was two years ago.

I have failed in two deep, rapidly destructive lesions involving the ear and the surrounding parts. Neither of these patients was well situated for treatment, but I am inclined to believe that I would have failed under any circumstances. These cases about cover the failures which I have had in adequately treated cases of epithelioma without metastasis.

I have had one or two surprising experiences in having epitheliomas get well under very vigorous exposures after I had practically decided that the treatment was a failure. This, I believe, was solely due to unusual resistance of the tissues to the influence of *x*-rays. I have recently had a case of epithelioma of the forehead of the size of a half dollar, which was referred to me by Dr. Leonard St. John, in which I treated the patient for two months without effect; indeed, the lesion spread under the exposures. The failure was so complete that I went to Dr. St. John and said that I was willing to admit a failure and to have him take the patient for operation. He was generous enough, however, to leave the case to my further care. I then applied *x*-rays for two weeks, vigorously enough, I am sure, to cause a severe burn in an individual of ordinary susceptibility. The result was that in six weeks I had a smooth, perfectly healthy-looking scar. I think there is no doubt that the explanation of the intractability of this lesion was the unusual tolerance to *x*-rays of this patient, not of the tissues of the tumor, but of all the patient's tissues, because the healthy surroundng skin reacted only very slightly under severe exposures.

EPITHELIOMA OF THE LOWER LIP.

Epitheliomas of the lower lip, in view of the danger of the involvement of the submaxillary glands, should be attacked by *x*-rays or by any other method which does not involve removing the contiguous glands, with extreme caution. I have treated 20 cases of epithelioma of the lower lip, most of which were referred to me by surgeons, and in all of which the treatment with *x*-rays was decided on after operation had been considered. Except one case, these were regarded as favorable cases for *x*-ray treatment; that is, they were of the superficial type of epitheliomas. Most of them were cases that involved a large surface of the lip but did not extend deeply. In 19 of the 20 cases there was no palpable involvement of the glands. It so happens that 19 of the cases gave healthy scars. Ten of them have been well for more than a year, 9 of them were treated during the last year. One case was that of an old man who had positively declined operation, and who had a large submental and a large submaxillary gland palpable when the treatment began, and that case was a failure.

All of my epitheliomas of the lower lip have been in men. I have treated only three epitheliomas of the upper lip and, curiously enough, two of the three were in women. In two cases I obtained a healthy scar. In the third, a very old woman with a deep-seated nodular recurrence after operation, there was healing but with a suspicious scar which after a year without treatment, although this was advised, broke down, and at present there is a recurrence.

Unquestionably, *x*-rays do not offer so radical a method of treating epitheliomas of the lip as does the operation which includes the removal of the submaxillary glands; but, if the removal of these glands is not to be done—and in many cases for various good reasons this is not the practice—all can be done by *x*-rays that can be done by any other method. I do not want to be understood as advocating the substitution of *x*-rays for radical operation in epithelioma of the lip, but only as saying that the method is efficacious on the lesions of the lip itself and is entitled to consideration in those cases in which the radical operation is not thought to be necessary or is for any reason impracticable.

As regards the treatment of epitheliomas covering large surfaces, *x*-rays offer a method of successful treatment for some cases which are so extensive that operation is out of the question. One such case I demonstrated three years ago symptomatically cured, and at the time of this patient's death—from acute illness—18 months later, there was no recurrence except a nodule in the skin the size of half a wheat grain. The possibilities of the method in cases of this sort are shown in a patient, referred to me by Dr. E. M. Marquardt, in which there was a rodent ulcer involving the entire forehead, extending down over the left eyebrow, involving both lids of the left eye, the skin of the nose almost down to the tip, and the upper right eyelid. Under *x*-ray treatment this promptly got well and, except for a pea-sized recurrence, has remained so for two and a half years. I have at present an old woman who, when treatment was begun, had an epithelioma on the middle of her back larger than a hand and excavated to the depth of an inch at the center. At present this is reduced to an abraded surface the size of three fingers and only slightly depressed. The tissue is free from evidence of carcinoma, but epidermis has not yet formed over the center of the lesion. These are cases in which nothing else offers prospect of relief.

As to the permanency of the results, I presented, three years ago, 7 epitheliomas symptomatically cured with *x*-rays. Of these 1 patient, who had an epithelioma larger than a hand, died 18 months later from an acute illness, with a recurrence half the size of a wheat grain. The other patients are well to-day. Four of them have had no recurrences, 2 of them have had minute recurrences which were not difficult to get rid of. Two of the cases were simple, small lesions which were not difficult to handle by any method; the other 5 cases were most of them extensive and all of them had failed of relief by previous treatment. In all of these cases, of course, there had been a microscopic diagnosis. My experience as to permanency in my subsequent cases has been quite as good. Where I have obtained a scar satisfactory to myself, recurrences practically have never taken place. Occasionally there have been small recurrences around the border of the lesions, but, as a rule, these have been of no gravity and have been readily handled. I am sure the cases will bear fair comparison as regards permanency of results with any similar number of cases treated by any other method.

One of the early objections to the use of *x*-rays in the treatment of epitheliomas was the length of time re-

quired for treatment. Occasionally now one finds a patient who is very insensitive to *x*-rays and in whom it requires numerous exposures to produce the necessary effect; in most cases, however, all the *x*-ray treatment necessary can be given in a few exposures. I have had numerous cases which have had only from three to five exposures, and in which the entire treatment to the point of production of a healthy scar did not extend over three weeks. A minor objection is that occasionally patients are quite susceptible and a dermatitis occurs which leaves an abraded surface that takes, according to its size, from three to six weeks to heal. I have never, however, seen any of these burns that gave more trouble than moderate tenderness and the slight inconvenience arising from an abrasion of the epidermis. I have never had a sloughing *x*-ray burn in an epithelioma, although I have thought that I was running the risk of it many times.

SENILE KERATOSES AND LEUCOPLAKIA.

In connection with epithelioma it seems that a word should be said about the treatment of two lesions which are so very frequently the forerunners of epithelioma, senile keratoses and leucoplakia buccalis. I have treated many senile keratoses with *x*-rays, some of which were not inflamed, and others which had irritated bases and presented the early stage of epithelioma. In some of my cases the lesions have been very numerous over the face, or over the face and hands. Senile keratoses can be made to disappear almost invariably. As there is no other satisfactory method of treating these lesions, and as they are so frequently the precursors of rodent ulcers, a successful method of treating them is no small gain.

I have not been nearly so successful in leucoplakia buccalis. I have succeeded in some cases in clearing off these patches, but I have also failed in some cases.

CARCINOMAS IN THE NECK.

I have treated many metastases of carcinoma in the neck arising from carcinomas in the mouth or on the lip. My experience with *x*-rays is that they are as futile as every other method in the treatment of the deep carcinomas in the neck. I have had two cases, however, in which there was a development of carcinoma in the scars after operations on the neck for carcinoma, which have been successful. In one of these cases there was a recurrent nodule in the scar on the lip and small nodules in the scars under the chin where glands had been removed; a third operation had been advised by a prominent Chicago surgeon. In the other, a similar case, there was development of small nodules in the scar. Both of these patients have been well now more than two years. In all my other cases the ultimate result has been failure. There has been distinct benefit in some of these cases in the way of relieving pain and of getting rid of much carcinomatous tissue, but in some of the cases there has not been even this.

MIXED TUMORS OF THE PAROTID.

During the last year I have had the opportunity of treating several cases of these curious, and clinically only slightly malignant, so-called mixed tumors of the parotid. All the cases are still under treatment, several of them showing decided diminution in the size of the tumor. In one such case, referred to me by Dr. L. L. McArthur, there has been almost complete disappearance of the tumor which had caused a very pronounced swelling over the parotid and had been gradually growing for several years.

RECURRENT CARCINOMA OF THE BREAST.

I have treated a large number of recurrent carcinomas of the breast, almost every one of which has been referred to me by a surgeon, and all of which were hopeless of other methods of relief. The results have been so surprising occasionally that I have not refused to treat any case unless there was already well-developed evidence of mediastinal or pulmonary involvement or of deep-seated distant metastases. It goes without saying that in such a desperate class of cases I have had failure after failure, and yet in many of the ultimate failures the treatment has been well worth while in healing ulcerations on the chest wall and in similar palliative ways. I am sure also that there can be no doubt that in many of these cases the course of the disease has been greatly checked and the patients' lives have been prolonged in comparative comfort for many months, or even for a year or more.

This statement is notably illustrated in one of the cases which I demonstrated three years ago in which a very extensive recurrence on the chest wall had been gotten rid of between Nov. 1, 1901, and March 1, 1902. This patient had a year of good health and comfort with only a slight recurrence, which yielded to a few *x*-ray exposures, the only treatment that she had during this time. The disease then recurred again, she declined to return for any further treatment and died after six months. Many similar cases could be cited.

In a good many cases results have been obtained which have proved permanent to the present time. Of the three cases of recurrent carcinoma of the breast which I presented three years ago, one, the patient last referred to, died eighteen months later of carcinoma of the lung; the second case died fifteen months later of carcinoma of the spine without recurrence in the chest wall. The third case remains well to-day. This patient had had two operations and on the third recurrence consulted Dr. Ochsner, who refused to operate further and referred her to me in September, 1901. She then had two ulcers the size of a fifty-cent piece in the scar surrounded by an indurated border of carcinoma. When her case was reported in February, 1902, Dr. Ochsner, in referring to the case, said that in his opinion she would have died before then had she not had *x*-ray treatment. She has never had another recurrence. She has had several series of *x*-ray exposures since that time as a precaution, but has now had no treatment for over a year, and she has remained symptomatically cured for three years. She has been in good health during all this time and has been able to earn her living. I have a good many similar cases with symptomatic cures that have persisted for from one to two and a half years.

In April, 1902, a woman, aged 46, was referred to me by Dr. Brannon of Manhattan, Ill. She had had a slowly-growing carcinoma which had been removed in September, 1901, and when she came for *x*-ray exposures there were nodules along the course of the scar, a large mass of fused glands in the axilla, a similar but smaller mass in the supraclavicular space, and slight edema of the arm. Physically she was much reduced. Under *x*-ray exposures the recurrence in the scar entirely disappeared, then the supraclavicular glands disappeared, and finally the axillary mass. The edema of the arm disappeared and she was restored to her normal health. She has been symptomatically cured for two and a half years.

On Nov. 19, 1902, Dr. Frank Billings referred to

me a woman, aged 67, with the following note: "Dr. Fenger removed the left breast Nov. 28, 1901. There is, as you will see, infiltration again above the clavicle. There is some dyspnea, but I can find no physical evidence of involvement of the lung or heart. There may be, of course, mediastinal disease now." Under *x*-ray exposures, vigorously given, the puffiness of the supraclavicular space subsided, and the supraclavicular glands, while not disappearing, diminished and softened and became hardly palpable. This patient has had no *x*-ray treatment for twenty-two months, and has shown no evidence of spread of the disease. In view of the utter hopelessness and progressive course of such cases, these results are certainly of interest.

PRIMARY CARCINOMA OF THE BREAST.

Of course, *x*-rays as a method of treatment of primary carcinoma of the breast should never be undertaken when operation is feasible; but that something can be done in primary carcinoma of the breast is shown by postmortems that were made in two patients of mine who had been treated in this way. One case was a large primary carcinoma of the breast with involvement of the axillary glands and with spinal involvement at the time the treatment was begun, and treatment was only given on the family's insistence. The patient was referred to me by Dr. Wyllis Andrews. She had *x*-rays to the point of producing a dermatitis before she died. Postmortem, the breast was found a mass of connective tissue with little gland tissue and no carcinoma tissue left. The axillary glands had almost entirely disappeared and there was increase of connective tissue in their place. Another case of primary carcinoma of the breast was referred to me by Dr. J. B. Murphy. Three months after beginning treatment, Dr. Murphy wrote me concerning her: "The carcinoma of the breast has entirely disappeared." She died a short time afterward from acute illness, and postmortem it was found by Dr. W. A. Evans that the tumor had been converted into a small fibrous mass about the diameter and two-thirds the length of an index finger. The axillary glands had not been affected by the *x*-rays.

These findings warrant the attempt to treat by *x*-rays carcinomas of the breast in which, for any reasons, operation is out of the question; but they certainly do not warrant any one in advising *x*-rays as a substitute for operation.

Up to January, 1904, I had used *x*-rays in 15 cases of primary carcinoma of the breast. Of these 15 patients, 6 have died. Every one of these 6 was in an advanced stage of carcinoma, and absolutely hopeless; they were referred to me by men like Dr. Fenger, Dr. Wyllis Andrews, Dr. Murphy, and Dr. Ochsner. Seven of the remaining 9 are living, from one to three years after they came under treatment, and if the disease is still present, its extent has diminished very greatly and it has shown no tendency to increase. These were all comparatively favorable cases; none of them had ulcerated, but nearly all of them showed large tumors in the breast with retraction of the nipple and with involvement of the axillary glands. Concerning the diagnosis in these cases, I believe there can be no room for doubt. They presented characteristic pictures, and all of them had been pronounced carcinomas by competent men.

I do not know whether the two remaining patients are alive. These two were both old women with extensive ulcerating carcinomas, and there seemed no reason to hope for more than palliation. In one case the ulceration was entirely healed and in both cases there was certainly decided improvement of the condition. Both the patients were living when I last heard from them, more than a year after they came under my observation.

I certainly do not believe that *x*-rays are entitled to any consideration as a reliable method for treating primary carcinoma of the breast, but, if operation is out of the question, I believe considerable hope of benefit, even of indefinitely prolonged relief, can be offered from *x*-rays.

CARCINOMA OF THE ABDOMEN AND OF THE PELVIS.

In carcinomas of the abdomen and of the pelvis, I have little that is definite to present. In carcinomas in the abdomen I have never convinced myself that anything has been done. In one case of carcinoma of the chest there has seemed to be very marked palliation from the use of *x*-rays. This was a case of carcinoma of the esophagus referred to me from Johns Hopkins by Dr. Halsted. Under *x*-ray treatment there was great improvement which was maintained for over a year. Then the tumor began to increase and killed the patient twenty months after he came under treatment.

I have treated several cases of recurrent carcinoma in the pelvis, usually after carcinoma of the uterus. I believe I correctly represent Dr. H. T. Byford and Dr. E. C. Dudley when I say that they thought there was considerable palliation in cases, which they observed, in the way of preventing vaginal involvement and perhaps in retarding the course of the disease. One such patient, referred to me by Dr. Byford, lived for one year in perfect comfort; her vaginal discharge and hemorrhage were quickly relieved and never returned; she was able to lead her usual life without inconvenience, and died within a week after the onset of her first acute symptoms. In another case, referred to me by Dr. Dudley, in which there was an enormous carcinoma extending well above the pelvis, the patient lived for one year without ever having a vaginal discharge and died within three days after she became bedridden.

The most radical improvement in any pelvic carcinoma that I have seen is in the case of a woman, referred to me by a Chicago surgeon. In October, 1903, after a history of hemorrhage beginning six months previously, the uterus and ovaries were removed for carcinoma. New nodules soon appeared in the scar which were treated assiduously after the usual methods, but continued to grow. At the time she came to me, on April 30, 1904, at the site of the vaginal scar there was a nodular mass about the size of a walnut, so large that it could not be entirely taken in by a Ferguson speculum. It was ulcerating and bleeding. In three weeks under *x*-ray exposures it had flattened down completely and there remained an ulcer the size of a ten-cent piece. In two months this had healed and left a healthy-looking scar. Since that time the patient has had one series of prophylactic *x*-ray exposures and she has remained well now for ten months. The vagina is perfectly clean and the scar is soft, without induration, and is healthy looking. The patient now weighs 175 pounds and is, as far as she knows, perfectly well.

SARCOMA.

My experience in sarcoma, of course, is not nearly so large as that in carcinoma, but it includes a considerable number of cases. The experience indicates that sarcomas are affected by *x*-rays in practically the same way as carcinomas. I am inclined to believe that they

are affected somewhat more readily. As the results, on the whole, are similar to those in carcinomas of similar extent, I will not burden this already overlong paper by an analysis of the cases. In general, it may be said that, as we rarely get sarcomas without the presence already of metastases, the results have been less favorable. Much can be done in way of palliation in many cases and symptomatic cures can be obtained in some.

PROPHYLACTIC USE OF X-RAYS AFTER OPERATION FOR MALIGNANT DISEASES.

The number of cases in which I have been able to carry out this procedure, while considerable, is not sufficient to allow of definite findings, and, as I have analyzed them elsewhere, I will not take the time to consider them here. This use of *x*-rays, I believe, is logical, and, as far as my experience extends, its utility is strongly confirmed by the results. I have a good many cases after operations for carcinoma and some after operations for sarcoma in which there are strong reasons for believing that the use of *x*-rays has thus far saved the patients. A few of the patients had had repeated operations for recurrences, and under *x*-rays have remained well now for a much longer time than any of the intervals between their previous recurrences. In a very few, the most desperate cases of this sort that I have treated, recurrences have taken place in spite of *x*-rays, but I believe I am correctly stating the impressions of the surgeons, who have sent me most of these cases, when I say that their record in the cases so treated seems to be better than it was before this became their practice.

It has been suggested many times that possibly the danger of the spread of carcinoma or sarcoma was increased when a lesion was exposed to *x*-rays. I have had this closely in mind, but in the several hundred cases that I have treated I have never seen a metastasis occur that seemed reasonably attributable to the use of *x*-rays. Metastases have certainly not occurred more frequently than would be expected naturally. I have, indeed, seen many lesions clean up without the development of metastases when there seemed to be every reason to fear them from the natural course of the disease. If this accident were probable it would show itself in my record of epitheliomas, and no such unexpected accident has happened in any of these cases.

PSEUDOLEUKEMIA AND LEUKEMIA.

The first suggestion, as far I know, of the use of *x*-rays in leukemia or in pseudoleukemia was made to me by Dr. A. J. Ochsner, and the first cases of this sort reported were three cases which I reported three years ago, two of which were demonstrated. One of these cases was a splenic leukemia which had inadequate treatment and was reported as a failure. The other two cases were cases of pseudoleukemia which I showed symptomatically cured. The first of these patients, a child 4 years old, had a recurrence of the disease in the neck seven months later, which was removed by operation, and the child died within a few days of inspiration pneumonia. In the second case, in which there had been very large glands, the patient is living and at his work at the present time. For two years after he was presented to the society he was well, he thought, and had no further treatment. A year ago he developed large mediastinal glands with pressure symptoms, but, much to my surprise, recovered under *x*-ray exposures given for a month. Recently he appeared again with some glands the size of an olive in the neck and groins which have just disappeared under *x*-ray exposures. Except for these two months he has been in his usual health and vigor for three years. I have had several cases of pseudoleukemia which have cleared up under *x*-rays, but no other case that I have been able to follow so closely as this one.

My experience in removing the enlarged glands in true leukemia has been as favorable as in pseudoleukemia, but in most of the cases that I have seen the improvement in the blood has not kept pace with the decrease in the glands; while the patients improved, the results have not been radical. I have recently, however, had an extraordinary experience in true leukemia.

Patient.—A physician, aged 34, was referred to me on Oct. 3, 1904, by Drs. W. A. Evans and Adolph Gehrmann with a diagnosis of splenic leukemia. He had not been in vigorous health for about a year, and on August 16 had had his appendix removed, and at that time his spleen was not enlarged.

Examination.—Soon after this he began to grow weak and five weeks later, on examination by Dr. Evans, he was found to have a well-developed splenic leukemia; it had developed, therefore, rapidly. On October 4 the spleen filled almost the entire left side of the abdomen, extending two inches below the umbilicus and inwards to the middle line, and was tender on pressure. The only other gland palpable was a pea-sized gland in the right clavicular space. He was much reduced in flesh and had rapidly lost strength until he was incapacitated for any exertion.

Blood.—The blood analysis of the Columbus laboratories at that time was as follows:

Percentage of hemoglobin	75
Number of red cells per cm	4,080,000
Percentage of red cells	81.6
Corpuscle hemoglobin index	91.8
Number of white cells per cm	160,000
Polymorphonuclears (per cent.)	58.6
Large mononuclears (per cent.)	10
Small mononuclears (per cent.)	4
Eosinophiles (per cent.)	1.2
Eosinophile myelocytes (per cent.)	1.2
Myelocytes (per cent.)	25

Treatment and Result.—The patient was given daily *x*-ray exposures, one over the spleen and a general exposure to take in all the body except the head. He was also given 10 mg. of sodium cacodylate, t. i. d. The improvement in his general condition was rapid. At the end of the first week he insisted that he felt distinctly better, and this improvement constantly continued. In two weeks the spleen was reduced to one-half its former size. On November 5, just one month after beginning treatment, the *x*-ray exposures were stopped on account of considerable erythema over the spleen, and he has had no further exposures, although the *x*-ray effect promptly subsided and at no time gave any trouble. By this time the spleen was reduced until it was just palpable. He had regained his normal health and vigor and had resumed his usual work. Since that time the general improvement and the improvement in his blood has been maintained. He has gained twenty pounds in weight, has a good color and the general appearance of a man in good health. The spleen shows no indications of returning enlargement and is not palpable.

Weekly differential blood counts showed continuous improvement until the blood became normal. Myelocytes were present in decreasing numbers until the middle of December, when they disappeared. At my request the Columbus laboratories made a count on December 28, which is as follows:

Percentage of hemoglobin	82
Number of red cells per cm	4,736,000
Percentage of red cells	94.7
Corpuscle hemoglobin index	86.6
Number of white cells per cm	6,900
Polymorphonuclears (per cent.)	73
Large mononuclears (per cent.)	6
Small mononuclears (per cent.)	19
Eosinophiles (per cent.)	2
Basophiles (per cent.)	1
Volume percentage	92

Coagulation firm in three minutes.

GOITER.

I have used *x*-rays in a good many cases of goiter. In some small parenchymatous goiters there has been per-

manent diminution in their size. In one of these cases the gland has shown no returning enlargement after eighteen months. In most of the cases, however, there has been no benefit.

70 Madison Street.

A BACTERIOLOGIC AND CLINICAL STUDY OF A CURATIVE SERUM FOR TYPHOID FEVER.*

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Although the production of an effective curative serum for typhoid fever would be a great addition to therapeutics, yet the accomplishment of this result is beset by several difficulties. It is well known that the typhoid bacillus is usually present in the blood and tissues, and that it increases in the tissues. The destruction of the bacilli in the circulation and tissues depends on the successful interaction of two distinct bodies.

The body which actually destroys the typhoid bacillus is the complement and is present as a ferment-like body in the serum or cells of the body. The second substance is usually the product of artificial immunity, though it too may be normally present in the body. It is well known as the intermediary body. Following out the theories of Ehrlich as so clearly explained by Welch[1] in the Huxley lecture for 1902, this intermediary body is produced in an immune serum by means of certain so-called haptophore groups which are possessed by the typhoid bacilli themselves. These groups of atoms have a special affinity for corresponding haptophorous groups in the cells of the body.

The continued appropriation of these receptors by the body cells causes an excessive production of similar receptors on the part of these body cells. Many of these are cast off into the lymph and blood and form the free amboceptors or intermediary body.

According to Ehrlich's latest statements, both the complement and the amboceptor, or intermediary body, are composed of several complex chemical groups. One group of the complement is called the zymotoxic group, and this causes the injury to the foreign cell which in the present instance is the typhoid bacillus. The complement also contains other groups which unite with complementophilic groups in the amboceptor, or intermediary body. The amboceptor in addition contains another haptophore group, which unites with a receptor of the foreign cell.

The destruction of the typhoid bacillus in the blood and tissues therefore depends on the assimilation of the zymotoxic group of the complement and the haptophore group of the intermediary body by receptors present in the typhoid bacillus.

EXPERIMENTAL WORK IN ANIMALS.

The work which we have undertaken has consisted in the production of a serum containing a large amount of the intermediary body, and it is therefore proper to first consider the question of the efficacy of an immune serum in the treatment of experimental typhoid infection in animals.

It has long been known that the injection of nonfatal doses of typhoid bacilli into guinea-pigs will render these animals immune to further inoculations, and the mechanism of this immunity has been explained by the work of Pfeiffer, Metchnikoff and Ehrlich. These experiments have only resulted in the protection of normal animals against typhoid infection, and have still left the cure of infection an open question.

Abell and Loeffler[2] were among the first to demonstrate the power of immune serum to cure typhoid infection in animals, and the serum which they used was prepared by injecting fresh fluid cultures of the typhoid bacillus into dogs in gradually increasing doses. The bacillus which they used would kill guinea-pigs weighing 300 grams in doses of 1/50 of a cubic centimeter, but 0.001 c.c. of the immune serum would protect guinea-pigs against 100 times the minimum fatal dose in non-protected animals. They could also cure guinea-pigs infected with double the fatal dose of typhoid bacilli as late as eight hours after infection by injecting 0.5 of a cubic centimeter of this immune serum.

Ainley Walker[3] also made a number of experiments which prove that animals can be protected against typhoid infection, and also cured after artificial infection has been produced.

In order to secure the maximum effect of a curative serum this writer considers that the animal yielding the serum should be injected with several different strains of *Bacillus typhosus*. This serum was prepared by first injecting a horse with dead carbolized cultures of one special strain of the typhoid bacillus. The dose was gradually increased to 150 cubic centimeters and this serum might be called serum No. 1. Serum No. 2 was prepared later from the same horse by injecting a similar mixture of four varieties of the typhoid bacillus, and it was therefore polyvalent. He found that serum No. 1 produced agglutination in much greater dilutions with the typhoid organism used for the immunization of the horse, than it did with the other typhoid bacilli. Serum No. 2, however, which was prepared by mixing the four different organisms, agglutinated all the types in much greater dilutions, although it still agglutinated the original bacillus in the highest dilution.

Rabbits were also immunized with races of bacilli from three different sources, and each strain was used for a definite period of time, one following the other.

It was found that the agglutinative power of the rabbit's serum rose toward each special bacillus during the period in which it was used for immunizing purposes, but remained much lower for other typhoid organisms.

The immunizing properties of the horse serum No. 1 and No. 2 were also tested by determining the least amount of serum which would protect guinea-pigs against the fatal dose of several different typhoid bacilli. Serum No. 1 was only protective in large doses when a type of bacillus was used which had not been used to immunize the horse. The polyvalent serum No. 2, in which four different types of typhoid bacilli were used for immunization of the horse, protected the

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* Read in the Section on Pathology and Physiology of the American Medical Association, at the Fifty-fifth Annual Session, June, 1904.

1. Welch: The London Lancet, Oct. 11, 1902.

2. Abell and Loeffler: Centralb. f. Bak. Erste Abt., Jan. 23, 1902.

3. Ainley Walker: Antityphoid Sera, Journal of Path. and Bact., June, 1901; Ibid., Immunization Against Immune Serum, Jour. of Path. and Bact., March, 1902; Ibid., Production and Specific Treatment of Typhoid Infection in Animals, Jour. of Path. and Bact., November, 1901.

guinea-pigs against the least fatal dose of all of the bacilli used for injecting the horse in much smaller doses than those which were effective against the same organisms with the first monovalent serum. As an example, monovalent serum No. 1 protected 100 grams of guinea-pig in doses of 0.3 c.c. of serum against bacillus 7, which was not used in its production. Bacillus 7 was used mixed with three other strains in injecting the horse for serum No. 2.

This serum No. 2, therefore, as might be expected, protected 100 grams of guinea-pig against the least fatal dose of bacillus 7 in a dose of 0.1938 cubic centimeters.

From what has gone before, it will be seen that the most effective serum for the general protection of animals against typhoid infection is a polyvalent serum.

Walker[3] was also able to produce a disease in rabbits, which ran a course similar to typhoid fever, and then cure such animals by the use of immune serum. In order to produce a continued fever, he injected protective serum intraperitoneally along with the typhoid bacillus, and while not enough to entirely protect the rabbits, it caused a prolonged fever in most cases.

If the rabbits received intraperitoneal doses of the typhoid bacillus and the protective serum for seven days a continued fever with emaciation was produced which usually terminated fatally in from ten to fifteen days. At the autopsy these animals showed distinct typhoid lesions, such as enlargement of the spleen and mesenteric lymph glands, and even swelling, hemorrhage, and occasionally ulceration of Peyer's patches.

Other rabbits were treated in a similar way, but after the infection had been established at the end of seven days the injection of the typhoid bacilli was discontinued. The injection of the protective immune serum was continued for from four to seven days longer, usually until the beginning of convalescence was noted. These animals almost always recovered from the infection.

Although Walker's experiments are not numerous, yet it can be concluded that in animals immune serum can cure typhoid infection, if used during the height of the disease.

DIFFICULTIES OF PRACTICAL APPLICATION.

One of the first objections to be met is the fact that a protective or curative serum for man must be prepared from another species, but this also partially holds good as against diphtheria antitoxin. Walker[3] thinks that the difference in the immune serum from different species consists in a distinct and separate immune body for each species. He proved that the immune body of the horse and guinea-pig for the typhoid bacillus were different in the following ingenious way: He injected guinea-pigs with gradually increasing doses of typhoid horse immune serum, and thus produced an anti-immune serum in the guinea-pig. This was caused by stimulating the receptors of the guinea-pig's cells to form many free receptors for the immune body of the horse's serum. After allowing the guinea-pigs several weeks in which to get rid of the immune serum, he tested them with a typhoid bacillus whose minimum fatal dose had already been established. He found that a substance had been formed in the guinea-pig's blood which was simply an antibody to the immune body in the horse's serum, since it took larger amounts of horse immune serum than usual to protect the guinea-pig against the known minimum fatal dose of the typhoid bacillus.

He found, however, that this substance was not an antibody toward the guinea-pigs' immune body, since the minimum fatal dose of the typhoid bacillus remained the same for these guinea-pigs, as for normal animals. The free receptors for the immune body of the horse could not combine with the immune body of the guinea-pig when called into play to destroy the bacilli. It therefore follows that the immune body of the horse and guinea-pig must differ since receptors forming an antibody and combining with the horse's immune body could not combine nor interfere with the immune body formed in the tissues of the guinea-pig, and the minimum fatal dose remained the same.

Walker does not think that this fact interferes with the immunization of one animal with the blood serum of another, since these different immune bodies all have the same haptophore atoms for the complement, and the practical results are just as satisfactory. Indeed, as above stated, he proved that he could cure rabbits suffering from typhoid infection with horse immune serum.

It has also been claimed by some that the injection of an immune serum will gradually produce an antibody to the immune serum, and that the bacteria will thus be allowed full sway. This anti-immune body would only be an antibody for the foreign immune serum injected, and in the case of a human being with typhoid fever would not interfere with the intermediary body of the human species, since the intermediary bodies are special to the species. Walker's experiments also show that it takes several weeks to form an anti-immune serum. He injected guinea-pigs with an immune serum every other day for 10 days, and then waited another week before drawing their serum. He still found that these animals were protected by a smaller dose of immune serum than normal animals, so that no anti-immune serum was produced even after seventeen days. It was only after waiting longer that an anti-immune body formed, so that reasoning from these experiments, the production of an anti-immune body would not play any practical part in the routine injection of four or five doses of immune serum in treating typhoid fever in human beings.

It may be also urged against the use of an immune serum, that during infection the complement becomes exhausted, and that the immune body is thus rendered useless and unable to destroy the bacteria without the complement.

The gradual loss of the complement in typhoid fever was first proved by Mark Richardson[4] who showed that the serum of typhoid patients, and even of convalescents, was not usually able to destroy typhoid bacilli, but that if the serum of normal persons was added to the mixture of typhoid serum and bacilli that complete bacteriolysis took place. If he mixed the normal serum and typhoid serum first and then added the typhoid bacilli no bacteriolysis or destruction of typhoid bacilli took place. Apparently the immune body must combine first with the typhoid bacillus in order to render the destructive and digestive effect of the complement effective.

Longcope[5] has studied the serum complement in typhoid fever, and his researches seem to show that there is a special complement in the blood for the immune body produced by the typhoid bacillus. Typhoid bacilli showing control plate cultures of from forty to

4. Richardson: Jour. of Med. Research, vol. vi, No. 1.
5. Longcope: Jour. of Hygiene, vol. iii, No. 1, January, 1903.

sixty thousand colonies were usually destroyed in five hours, by one cubic centimeter of serum from typhoid patients, but the diminution of complement was shown by the large amounts of the typhoid serum which were necessary to render active heated serum in destroying the typhoid bacillus. It took from 1/10 to 2/10 of a cubic centimeter of the untreated typhoid serum to reactivate heated serum for the *Bacillus dysenteriæ* and *Bacillus paratyphi*, and from 2/10 to 4/10 of a cubic centimeter of this unheated serum to reactivate the heated serum and cause it to destroy the typhoid bacilli in five hours.

Although Longcope's experiments indicate a slight diminution in the typhoid complement in typhoid fever, yet this does not prove that it is absent or even beyond the reach of an immune body when injected.

The most serious danger to be avoided in the use of immune serum in the treatment of typhoid fever is the use of an excessive amount of serum. Such serum in great excess, according to Walker, may do harm by absorbing all the complement, and thus prevent bacteriolysis.

He used tubes containing from ten to twenty drops of fresh rabbit's serum and found that such quantities destroyed one loopful of typhoid bacilli in about five hours. He then added immune rabbit or horse typhoid serum to the fresh rabbit serum which had been heated to 55 C., thus only leaving the immune body. Quantities of the immune serum equaling from 1/4 to 1/2 the fresh serum caused a decrease in the destruction of the typhoid bacilli, and equal parts of the immune serum entirely prevented bacteriolysis. Walker thought that the excessive amount of the intermediary body combined with the complement and prevented its action in dissolving the typhoid bacilli. When 1/10 of the immune serum was added bacteriolysis was not interfered with, and certainly such a quantity of immune serum as compared to the normal serum of the body would never be used in the treatment of a typhoid patient.

In the body of a patient during typhoid infection an excessive amount of immune body will probably find other materials with which to combine in preference to the complement. Welch[1] in "The Huxley Lecture" has called attention to the fact that while it has been well recognized that the injection of typhoid bacilli or other foreign cells into the tissues of an animal host will produce an intermediary body from the cells of the host, yet the final action of intermediary bodies upon the bacteria has not been considered. He advances the theory that the foreign bacteria may stimulate the cells to the formation of intermediary bodies, which in turn call forth the production of intermediary bodies by the invading bacteria themselves. These, if they find suitable complements in the serum, can produce cytolysis or injury to the various tissue cells, and this theory can thus account for the extensive injuries to the various body cells in such an infection as typhoid fever. An excessive amount of immune body which could not be used in bacteriolysis might combine with these discharged bacterial receptors and prevent their injuring the cells of the body.

It is important, therefore, to prepare an immune serum by using dead as well as living cultures, as Walker has shown that a serum made only from live cultures will not protect guinea-pigs against injections of dead cultures containing the intracellular poisons of the typhoid bacillus.

METHODS OF PREPARING AND STANDARDIZING THE SERUM.

The preparation of the first serum which we used on patients was begun in July, 1900, and the results were published in *The Proceedings of the American Public Health Association* for 1901, and the *Maryland Medical Journal* for August, 1902.[6] Since that time several other serums have been prepared, but as the methods of preparation have not changed, the following quotation from our first article will explain our general method of preparation of the serum in detail. It has not been thought necessary to publish more than one table in explanation of the injections of the hog, the changes in agglutination, and the determination of the minimal fatal dose and the protection afforded animals against multiple fatal doses by the serum. Certain statements at the end of these typical tables will briefly summarize the work which has been performed in connection with these points in relation to the other serums which we have prepared:[7]

An organism was obtained from the Johns Hopkins Pathological Laboratory called bacillus No. 16, which was found to be virulent for guinea-pigs in doses of 1 c.c. when introduced into the peritoneal cavity. Forty-eight-hour-old cultures were used for injection, and on July 24, 1900, a dose of 10 c.c. was injected into the tissues of the abdomen of hog No. 1. These injections were continued in increasing doses at intervals of about ten days until Dec. 31, 1900, when the dose had reached 1,130 c.c. of a pure bouillon culture of the typhoid bacillus. The temperature during all this time was never lower that 39.5 degrees C., and never reached over 41 degrees C. As the larger injections were given the animal would sometimes remain quiet for a day and lose its appetite. No sloughs occurred, and the health of the animal remained practically normal.

It is a difficult matter to inject such quantities as a liter of bouillon into the subcutaneous tissues of the abdomen of a hog, but we succeeded well by using the glass vessel intended for injecting salt solution. The fluid can be forced into the tissues by attaching the foot bellows of a blast flame by rubber tubing to the glass tube entering the top of the salt-solution apparatus. The needle for injecting should be very stout, with a large lumen. The one which we used had a lumen of 1 mm. By this means a liter can be injected through two punctures of the skin, one-half of a liter being forced into the loose tissue on each side of the groin. The skin should be washed and disinfected with 5 per cent. carbolic acid before each injection.

The animal was bled three times, 1 liter of blood being drawn each time, which yielded about 200 c.c. of serum. After the first bleeding a month elapsed, when 500 c.c. were again injected, and in two weeks the animal was again bled. This was again repeated, and serums No. 1, No. 2 and No. 3 were thus produced. This serum was kindly drawn and trikresolized at Mr. Mulford's laboratory, and we desire to thank him and Dr. J. J. Kinyoun for their kindness.

On Aug. 1, 1902, hog No. 2 was injected with 5 c.c. of a twenty-four-hour culture of the typhoid bacillus made virulent by the celloidin capsule treatment in the peritoneal cavity of a guinea-pig. This killed 300-gram guinea-pigs in doses of .3 of a cubic centimeter of the suspension from blood serum cultures described later. In two weeks 100 c.c. were injected without any bad results, and the dose was increased every two weeks until at the end of eleven months the hog received 1,000 c.c. of a virulent typhoid culture. On August 1, 200 c.c. of serum were obtained from this hog and was called serum No. 4.

6. Stokes and Fulton: Proceedings of the Amer. Pub. Health Assn., 1901, and Maryland Medical Jour., August, 1902.
7. Quotation from former article.

Hog No. 3 was treated at the same time to similar injections, and was bled in eleven months from the left carotid artery and 200 c.c. of serum were obtained. The artery was ligated, and at intervals of two weeks the hog was again injected with doses beginning with 500 c.c. and ending with 1,000 c.c. After two months' treatment 200 c.c. of serum was again obtained and the hog was allowed to die from this bleeding from the right carotid artery. The serums were called No. 5 and No. 6.

Hog No. 4 was first injected with 50 c.c. of a typhoid bacillus called bacillus No. 6, on April 15, 1903, and in four days the dose was increased to 100 c.c. The doses were rapidly increased until at the end of twenty days the hog received 400 c.c. At the end of 70 days 800 c.c. of a virulent twenty-four-hour culture of the typhoid bacillus was injected, and similar doses of a second and very virulent bacillus called *Bacillus wassermannii* were injected every two weeks for 70 more days. To some extent, at least, this last serum was made polyvalent, and the serum thus obtained we shall call polyvalent serum No. 1, to distinguish it from the other serums, which were monovalent. This *Bacillus wassermannii* was fatal to guinea-pigs in a dose .25 cm. of the suspension from a blood serum tube in 4 c.c. of salt solution which is described later as the routine standard for determining the minimum fatal dose.

In order to show how virulent this Wassermann bacillus had become, it might be mentioned that we treated hog No. 5 just as we had hog No. 4, but on giving the animal its first injection of 800 cubic centimeters of *Bacillus wassermannii* the animal died four days later of general typhoid bacteriemia with extensive necrosis at the seat of inoculation, and areas of necrosis in the various viscera.

PRODUCTION OF AGGLUTINATION BY THE VARIOUS SERUMS.

A series of experiments had been carried on with hog No. 1 in which a liter of pure bouillon typhoid culture was given to the animal as food every day for one month. This did not even cause a distinct agglutinative reaction at a dilution of 1 to 10. When the subcutaneous injections were begun, however, the agglutinative reaction began to rise, and on March 1, 1901, the serum gave a distinct agglutinative reaction at a dilution of 1 to 45,000. This was called serum No. 1. On April 12, after the second bleeding, the agglutinative reaction fell to 1 to 30,000, and on May 15, after the third bleeding, the serum only gave a reaction at 1 to 15,000. Only complete reactions after two hours were counted, and all of these showed complete agglutination and cessation of motility even after twenty-four hours. Table No. 1 will show the gradual increase in the power of the agglutinative reaction.

The serums prepared from hogs No. 2 and No. 3 were tested for the power of agglutination, but this was very weak, only reaching a positive reaction with the bacillus which was used for immunizing the hogs in a dilution of 1 to 1,000. These serums were Nos. 4, 5 and 6.

The polyvalent serum No. 1, from hog No. 4 was tested for the strength of its agglutinative power with several different types of typhoid bacilli, including the organisms which were used in immunizing the hog. As our results correspond to those obtained by Ainley Walker, a description of his experiments will first be made.

This observer found when he immunized rabbits with a certain race of the typhoid bacillus that the serum of these rabbits would agglutinate this special bacillus in much higher dilutions than those effective in agglutinating other races of typhoid bacilli. If he used another race of the typhoid bacillus for a second set of injections in the same animal he found that the serum would agglutinate this second organism in dilutions just as great as that obtained for the first organism, but that no cumulative effect could be obtained from these two sets of injections. In other words, the serum from rabbits prepared by injecting them with bacillus A. and bacillus B., would only agglutinate these organisms in as high a dilution as the serum prepared by simply injecting either bacillus A. or bacillus B. separately.

TABLE No. 1.

AGGLUTINATION EXPERIMENTS.—Record of Widal test in pig injected with cultures of the typhoid bacillus.

Date of Test.	Results.	Dilution.
August 22, 1900	+	1-100
August 22, 1900	+	1-500
August 22, 1900	+	1-1000
August 22, 1900	—	1-2000
August 22, 1900	—	1-5000
August 22, 1900	—	1-10000
August 22, 1900	—	1-15000
August 29, 1900	+	1-1000
August 29, 1900	—	1-1500
August 29, 1900	+	1-2000
September 15, 1900	+	1-1500
September 15, 1900	+	1-2000
September 15, 1900	Slight.	1-3000
September 15, 1900	Slight.	1-4000
October 16, 1900	Slight.	1-3000
October 16, 1900	—	1-4000
November 1, 1900	+	1-3000
November 1, 1900	+	1-4000
November 13, 1900	+	1-4000
November 13, 1900	+	1-5000
November 13, 1900	+	1-6000
November 13, 1900	+	1-7000
November 20, 1900	—	1-8000
November 20, 1900	—	1-9000
December 4, 1900	+	1-7000
December 4, 1900	+	1-8000
December 15, 1900	+	1-9000
December 15, 1900	+	1-10000
	Serum No. 1, Drawn Feb. 27, '01.	
March 13, 1901	+	1-14000
March 13, 1901	+	1-15000
March 13, 1901	+	1-16000
March 13, 1901	+	1-17000
March 13, 1901	+	1 20000
March 21, 1901	+	1-22000
March 21, 1901	+	1-24000
March 21, 1901	+	1-26000
March 21, 1901	+	1-28000
March 21, 1901	+	1-30000
March 28, 1901	+	1-32000
March 28, 1901	+	1-34000
March 28, 1901	+	1-36000
March 28, 1901	+	1-38000
March 28, 1901	+	1-40000
April 12, 1901	+	1-45000
April 12, 1901	Slight.	1-50000
April 12, 1901	Slight.	1 55000
April 12, 1901	—	1-60000
April 12, 1901	Slight.	1-65000
	Serum No. 2, Drawn Mar. 10, '01.	
April 13, 1901	+	1-15000
April 13, 1901	+	1-20000
April 13, 1901	+	1-25000
April 13, 1901	+	1-30000
April 13, 1901	+	1-35000
	Serum No. 3, Drawn April 5, '01.	
May 1, 1901	+	1-15000
May 1, 1901	°	1-20000

On June 13, after the hog No. 4 had received 650 c.c. of a bouillon culture of bacillus No. 6, the serum agglutinated this organism at a dilution of 1 to 10,000, and on September 25, it gave an agglutinative reaction at a dilution of 1 to 50,000 when added to bacillus No. 6. Injections with this organism had ceased about July 15, when the dose reached 80 c.c., and similar injections of a typhoid bacillus called *Bacillus wassermannii* were given so as to make the serum polyvalent. Yet, strange to say, on September 25, when the serum agglutinated bacillus No. 6 at 1 to 50,000 it did not agglutinate *Bacillus wassermannii* even in as strong a dilution as 1 to 100. The hog was bled on September 20, and from that time until October 15, the Wassermann typhoid bacillus was injected every two weeks in doses

TABLE No 2.—SHOWING ANIMAL EXPERIMENTS.

No. of Guinea Pig.	Dose of Serum No. 3.	Dose of Typhoid Bacillus.	Died.	Result of Autopsy.
No. 1	None	1 cm. Bouillon Culture	No.	
No. 2	None	1 cm. Bouillon Culture	No.	
No. 3	None	1 cm. Bouillon Culture	No.	
No. 4	None	1 cm. Bouillon Culture	No.	
No. 5	None	1 cm. Bouillon Culture	No.	
No. 6	None	1 cm. Bouillon Culture	No.	
No. 7	None	1 cm. Bouillon Culture	No.	
No. 8	None	2 cm. Suspension fr. Serum, Bacillus No. 1	Yes; 24 hours.	Purulent Peritonitis; General Septicemia.
No. 9	None	2 cm. Suspension fr. Serum, Bacillus No. 1	Yes; 24 hours.	Purulent Peritonitis; General Septicemia.
No. 10	None	2 cm. Suspension fr. Serum, Bacillus No. 2	No.	
No. 11	None	2 cm. Suspension fr. Serum, Bacillus No. 2	No.	
No. 12	None	2 cm. Suspension fr. Serum, Bacillus No. 3	No.	
No. 13	None	2 cm. Suspension fr. Serum, Bacillus No. 3	No.	
No. 14	None	2 cm. Suspension fr. Serum, Bacillus No. 4	Yes; 24 hours.	Purulent Peritonitis; General Septicemia.
No. 15	None	2 cm. Suspension fr. Serum, Bacillus No. 4	Yes; 24 hours.	Purulent Peritonitis; General Septicemia.
No. 16	None	2 cm. Suspension fr. Serum, Bacillus No. 5	No.	
No 17	None	2 cm. Suspension fr. Serum, Bacillus No. 5	No.	
No. 18	None	2 cm. Suspension fr. Serum, Bacillus No. 1	Yes; 24 hours.	Purulent Peritonitis; General Septicemia.
No. 19	None	2 cm. Suspension fr. Serum, Bacillus No. 1	Yes; 24 hours.	Purulent Peritonitis; General Septicemia.
No. 20	1 cm. Subcutaneous	2 cm. Suspension fr. Serum, Bacillus No. 1	No.	
No. 21	1 cm. Subcutaneous	2 cm. Suspension fr. Serum, Bacillus No. 1	No.	
No. 22	1 cm. Subcutaneous	2 cm. Suspension fr. Serum, Bacillus No. 1	No.	
No. 23	1 cm. Subcutaneous	2 cm. Suspension fr. Serum, Bacillus No. 4	No.	
No. 24	1 cm. Subcutaneous	2 cm. Suspension fr. Serum, Bacillus No. 4	No.	
No. 25	1 cm. Subcutaneous	2 cm. Suspension fr. Serum, Bacillus No. 4	No.	
No. 26	0.5 cm. Subcutaneous	2 cm. Suspension fr. Serum, Bacillus No. 1	No.	
No. 27	0.5 cm. Subcutaneous	2 cm. Suspension fr. Serum, Bacillus No. 1	No.	
No. 28	0.5 cm. Subcutaneous	2 cm. Suspension fr. Serum, Bacillus No. 1	No.	
No. 29	0.5 cm. Subcutaneous	2 cm. Suspension fr. Serum, Bacillus No. 4	No.	
No. 30	0.5 cm. Subcutaneous	2 cm. Suspension fr. Serum, Bacillus No. 4	No.	
No. 31	0.5 cm. Subcutaneous	2 cm. Suspension fr. Serum, Bacillus No. 4	No.	
No. 32	None	1 cm. Bacillus No. 1	Yes; 24 hours.	Purulent Peritonitis; General Septicemia.
No. 33	None	1 cm. Bacillus No. 1	Yes; 48 hours.	Purulent Peritonitis; General Septicemia.
No. 34	None	0.5 cm. Bacillus No. 1	Yes; 24 hours.	Purulent Peritonitis; General Septicemia.
No. 35	None	0.5 cm. Bacillus No. 1	Yes; 24 hours.	Purulent Peritonitis; General Septicemia.
No. 36	None	0.5 cm. Bacillus No. 1	Yes; 24 hours.	Purulent Peritonitis; General Septicemia.
No. 37	None	1 cm. Bacillus No. 4	Yes; 36 hours.	Purulent Peritonitis; General Septicemia.
No. 38	None	1 cm. Bacillus No. 4	Yes; 24 hours.	Not Autopsied.
No. 39	None	6.5 cm. Bacillus No. 4	Yes; 48 hours.	Not Autopsied.
No 40	None	0.5 cm. Bacillus No. 4	Yes; 24 hours.	Purulent Peritonitis; General Septicemia.
No. 41	None	0.5 cm. Bacillus No. 4	Yes; 24 hours.	Purulent Peritonitis; General Septicemia.
No. 42	None	0.5 cm. Bacillus No. 1	Yes; 24 hours.	Purulent Peritonitis; General Septicemia.
No. 43	None	0.5 cm. Bacillus No. 1	Yes; 24 hours.	Purulent Peritonitis; General Septicemia.
No. 44	None	0.5 cm. Bacillus No. 1	Yes; 5 days.	No Autopsy.
No. 45	None	0.5 cm. Bacillus No. 1	Yes; 9 days.	No Autopsy.
No. 46	None	0.5 cm. Bacillus No. 1	Yes; 4 days.	No Autopsy.
No. 47	0.1 cm. Subcutaneous	0.5 cm. Bacillus No. 1	No.	
No. 48	0.1 cm. Subcutaneous	1.0 cm. Bacillus No. 1	No.	
No. 49	0.1 cm. Subcutaneous	1.5 cm. Bacillus No. 1	Yes	Purulent Peritonitis; General Septicemia.
No. 50	0.1 cm. Subcutaneous	2.0 cm. Bacillus No. 1	Yes	Purulent Peritonitis; General Septicemia.
No. 51	0.1 cm. Subcutaneous	2.5 cm. Bacillus No. 1	Yes	Purulent Peritonitis; (No Cultures).
No. 52	0.1 cm. Subcutaneous	3.0 cm. Bacillus No. 1	Yes	Purulent Peritonitis; (No Cultures).
No. 53	0.1 cm. Subcutaneous	3.5 cm. Bacillus No. 1	Yes	Purulent Peritonitis; General Septicemia.
No. 54	0.1 cm. Subcutaneous	4.0 cm. Bacillus No. 1	Yes	Purulent Peritonitis; General Septicemia.
No. 55	None	1 cm. Bacillus fr. capsule to increase virulence	Yes	Purulent Peritonitis; General Septicemia.
No. 56	None	0.5 cm. Bacillus fr. capsule to increase virulence	Yes	Purulent Peritonitis; General Septicemia.
No. 57	None	0.3 cm. Bacillus fr. capsule to increase virulence	Yes	Purulent Peritonitis; General Septicemia.
No. 58	None	0.2 cm. Bacillus fr. capsule to increase virulence	No.	
No. 59	None	0.1 cm. Bacillus fr. capsule to increase virulence	No.	
No. 60	0.1 cm. Intraperitoneal	0.3 cm. Bacillus fr. capsule to increase virulence	No.	
No. 61	0.1 cm. Intraperitoneal	0.5 cm. Bacillus fr. capsule to increase virulence	No.	
No. 62	0.1 cm. Intraperitoneal	0.7 cm. Bacillus fr. capsule to increase virulence	No.	
No. 63	0.1 cm. Intraperitoneal	0.8 cm. Bacillus fr. capsule to increase virulence	No.	
No. 64	0.1 cm. Intraperitoneal	1.0 cm. Bacillus fr. capsule to increase virulence	No.	
No. 65	0.1 cm. Intraperitoneal	1.0 cm. Bacillus fr. capsule to increase virulence	No.	
No. 66	0.1 cm. Intraperitoneal	1.5 cm. Bacillus fr. capsule to increase virulence	No.	
No. 67	0.1 cm. Intraperitoneal	2 cm. Bacillus fr. capsule to increase virulence	Yes; 48 hours.	Purulent Peritonitis; General Septicemia.
No. 68	0.1 cm. Intraperitoneal	2.5 cm. Bacillus fr. capsule to increase virulence	Yes; 24 hours.	Purulent Peritonitis; General Septicemia.
No. 69	0.1 cm. Intraperitoneal	3 cm. Bacillus fr. capsule to increase virulence	Yes; 24 hours.	No Autopsy.
No. 70	0.5 cm. Intraperitoneal	1.0 cm. Bacillus fr. capsule to increase virulence	No.	
No. 71	0.5 cm. Intraperitoneal	1.5 cm. Bacillus fr. capsule to increase virulence	No.	
No. 72	0.5 cm. Intraperitoneal	2.0 cm. Bacillus fr. capsule to increase virulence	No.	
No. 73	0.5 cm. Intraperitoneal	2.5 cm. Bacillus fr. capsule to increase virulence	Yes	Purulent Peritonitis; General Septicemia.
No. 74	0.5 cm. Intraperitoneal	3.0 cm. Bacillus fr. capsule to increase virulence	Yes	No Autopsy.
No. 76	None	0.3 cm. Dead Bacilli	No.	
No. 77	None	0.5 cm. Dead Bacilli	No.	
No. 78	None	0.8 cm. Dead Bacilli	No.	[Fatty Degeneration.
No. 79	None	1.0 cm. Dead Bacilli	Yes	Focal Necroses, General Congestion.
No. 80	None	1.2 cm. Dead Bacilli	Yes	Focal Necroses, General Congestion.
No. 81	0.5 cm	0.8 cm. Dead Bacilli	No.	[Fatty Degeneration.
No. 82	0.5 cm	0.8 cm. Dead Bacilli	No.	
No. 83	0.5 cm	1.0 cm. Dead Bacilli	No.	
No. 84	0.5 cm	1.0 cm. Dead Bacilli	Yes	
No. 85	0.5 cm	1.5 cm. Dead Bacilli	Yes	Focal Necroses.
No. 86	0.5 cm	1.5 cm. Dead Bacilli	No.	
No. 87	0.5 cm	2.0 cm. Dead Bacilli	No.	
No. 88	0.5 cm	2.0 cm. Dead Bacilli	No.	[eral Congestion.
No. 89	0.5 cm	2.5 cm. Dead Bacilli	Yes	Focal Necroses, Enlarged Spleen, Gen-
No. 90	0.5 cm	2.5 cm. Dead Bacilli	Yes	No Autopsy.

of 800 cubic centimeters. The first bleeding, the cessation of injections with bacillus No. 6, and the use of the second organism, or the Wassermann bacillus were all probably effective in causing a drop in the agglutinative strength of the hog's serum toward bacillus No. 6, and in increasing its effect toward *Bacillus wassermannii*. At any rate, tests made with serum after the second bleeding on Oct. 15, showed that this serum would only agglutinate bacillus No. 6 in a dilution of 1 to 10,000, while the same serum from September 25 to October 15, while *Bacillus wassermannii* was being used as an injection, had risen in its strength toward this organism from 1 to 100 to 1 to 10,000. It also caused the agglutination of a typhoid bacillus obtained from a typhoid orchitis and a second organism obtained from the spleen of a typhoid case in the same dilution, but when the serum was heated at 56 C. for one hour it only agglutinated these organisms at a dilution of 1 to 5,000. These facts correspond with McFarland's statement that the agglutinins are diminished in activity by a temper-

TABLE No. 3.

Experiments for Bacteriolytic Effect of Rabbit Serum.	Colonies in Agar Plates.			
	No hours.	3 hours.	6 hours.	18 hours.
1. 1 c.c. unheated immune hog serum + Wassermann bacillus	160	33	36	60
2. 1 c.c. unheated immune hog serum + laboratory typhoid No. 6	300	14	6	0
3. 1 c.c. heated immune hog serum + Wassermann typhoid bacillus	630	405	1260	0
4. 1 c.c. heated immune hog serum + laboratory typhoid No. 6	630	10	30 (Compare.)	1
5. 1 c.c. unheated rabbit serum + Wasserman bacillus	1440	3600	2,4000 (about.)	48,000 (about.)
6. 1 c.c. heated rabbit serum + laboratory typhoid No. 6	150	300	3000	50,000 (about.)
7. 1 c.c. heated immune hog serum + 1/20 c.c. rabbit's serum + Wassermann typhoid	1500	270	600	6000
8. 1 c.c. heated immune hog serum + 1/20 c.c. rabbit's serum + laboratory typhoid No. 6	180	18	10	4200
9. Immune serum 1 c.c. + rabbit serum 1 c.c. + Wassermann bacillus. (Experiments to see if the complement in rabbit's serum for typhoid will combine with small quantities of immune body from immune hog serum of hog. Immune serum added before bacillus.)	540	360	300	3000
10. 1 c.c. rabbit's serum + 1/10 c.c. immune hog serum + Wassermann typhoid	750	1050	12,000 (about.)	100,000 (about.)
11. 1 c.c. rabbit's serum + 1/10 c.c. immune hog serum + laboratory typhoid	90	180	6000	12,000
12. Dog serum + Wassermann typhoid bacillus	540	50	10	0
13. Dog serum + laboratory typhoid bacillus	720	20	0	0
14. Heated dog serum + laboratory typhoid	640	1080	Innumerable.	Innumerable.
15. Dog serum heated + Wassermann typhoid + 1/10 c.c. immune hog serum	600	1140	"	14400
16. Heated dog serum + laboratory typhoid + 1/10 c.c. hog immune serum	600	1200	"	Innumerable.
17. Heated dog serum + laboratory typhoid + 1/100 c.c. immune hog serum	700	3600	"	"
18. Unheated dog serum + laboratory typhoid + 1/10 immune serum	890	2	0	0
19. Heated dog serum + laboratory typhoid + 1/10 immune serum heated	420	5 hours. 480	7 hours. 50	90
20. Heated dog serum + laboratory typhoid + 1/100 c.c. immune serum heated	570	5400	24,000 (about)	Innumerable.
21. Heated dog serum + laboratory typhoid + 1/1000 c.c immune serum heated	480	6000	36,000 (about.)	"
22. Unheated dog serum + laboratory typhoid + 1/10 heated immune serum	540	0	0 (few contaminations.)	0
23. Unheated dog serum + laboratory typhoid + 1/100 c.c. heated immune serum	Contaminated.	0	0	Contaminated.
24. Unheated dog serum + laboratory typhoid + 1/1000 c.c. heated immune serum	660	0	0	0

TABLE No. 4.

Experiments on Bacteriolytic Effect of Hog Serum, Immune and Normal.	Colonies in Agar Plates.			
	No hours.	3 hours.	6 hours.	24 hours.
1. Hog serum + laboratory typhoid	720	.....	2700	Innumerable.
2. Heated hog serum + laboratory typhoid	675	1050	2400	"
3. Heated hog serum + unheated immune serum 1/10 c.c. + laboratory typhoid	1200	150	75	"
4. Heated hog serum + heated immune hog serum 1/10 c.c. + laboratory typhoid. (All the rest have 3 drops bouillon except No. 13.)	1350	600	360	"
5. 1/10 c.c. hog serum + 9/10 c.c. normal salt solution 3 loops bouillon + laboratory typhoid	1200	360	760	"
6. 1/10 c.c. hog serum + 8/10 c.c. normal salt solution + 1/10 c.c. immune serum + 3 loops bouillon + laboratory typhoid	1030	420	350	"
7. 1/10 c.c. hog serum + 1/10 c.c. heated immune serum + 8/10 c.c. salt solution + 3 loops bouillon + laboratory typhoid	1200	900	660	150
8. Same as No. 7, + 1/100 c.c. heated immune serum. 0.9 c.c. salt. 3 loops of bouillon	675	1050	450	Innumerable.
9. 0.5 c.c. hog serum + 0.3 salt solution + 1/10 c.c. immune serum + laboratory typhoid. 3 loops bouillon	600	750	3500	"
10. 0.3 c.c. hog serum + 0.6 c.c. salt + 1/10 c.c. immune serum + laboratory typhoid. 0.6 c.c. salt	420	Contaminated.	Contaminated.	"
11. 0.5 c.c. hog serum + 0.4 c.c. salt + 0.1 c.c. heated immune serum + laboratory typhoid 0.5 c.c. salt	1650	600	.....	6000
12. 0.9 c.c. salt + 1/10 c.c. heated immune serum + laboratory typhoid. 3 drops bouillon. 0.9 c.c. salt	1500	600	660	60
13. 1 c.c. salt solution	2100	780	360	1050
14. 1 c.c. salt solution + 3 drops bouillon	1800	1110	14400	Innumerable.

ature of 60 C. They are destroyed by a temperature of 80 C. Ainley Walker's article on "Antityphoid Sera" contains an excellent account of the variations in agglutination following the injection of different races of the typhoid bacillus.

THE MINIMAL FATAL DOSE AND THE PROTECTIVE INFLUENCE OF THE SERUMS.

In a former publication[6] we described the results of the serum treatment of six cases of typhoid fever, and as the method of testing the minimal fatal dose and the protective influence of the serum has not changed, we have included the description of these methods in our present article, as the following quotation will show:

"It was found that it was not profitable to use bouillon cultures of the typhoid bacillus for injection into animals, because such large doses were needed to produce fatal results. It was found to be much more convenient to use a growth from Loeffler's blood serum, and the following uniform method was pursued:

"The blood serum slanted in a small tube measuring 15 mm. by 8 cm. will usually grow about four loopfuls of typhoid bacilli if the circumference of the loop measures 3 mm. in outside diameter. Four c.c. of sterile Dunham's solution were added to each blood serum tube after the typhoid bacillus had been allowed to develop for twenty-four hours. The growth from the surface was thoroughly mixed with the sterile Dunham's solution, and each cubic centimeter of this suspension, therefore, equaled one loopful of a twenty-four-hour slanted blood serum culture of the typhoid bacillus."

Bacillus No. 1 and bacillus No. 4 which we obtained from the Johns Hopkins Hospital were found to pro-

TABLE No. 5.

EXPERIMENTS IN BACTERIOLYSIS WITH SERUM FROM FIRST AND SECOND BLEEDING. ALL + 3 LOOPFULS OF STERILE BOUILLON	COLONIES IN AGAR PLATES.			
	No hours.	3 hours.	6 hours.	24 hours.
1. 1 c.c. salt solution + 1/10 c.c. immune pig serum, drawn on Sept. 20, + laboratory typhoid	180	720	405	Sterile.
2. 1 c.c. salt solution + 1/10 c.c. heated immune serum. Sept. 20 + laboratory typhoid	220	348	525	"
3. 1 c.c. salt solution + 1/100 c.c. immune hog serum. Sept. 20 + laboratory typhoid	435	360	330	1800
4. 1 c.c. salt solution + 1/100 c.c. heated immune serum of Sept. 20 + laboratory typhoid	288	150	750	9000
5. 1 c.c. salt solution + 1/1000 c.c. immune serum + laboratory typhoid	300	344	150	2400
6. 1 c.c. salt solution + 1/1000 c.c. heated immune serum + laboratory typhoid	510	268	675	4200
7. 1 c.c. salt solution + 1/10000 c.c. immune serum + laboratory typhoid	600	390	300	6000
8. 1 c.c. salt solution + 1/10000 c.c. heated immune serum + laboratory typhoid	350	450	710	3600
EXPERIMENTS ON SERUM FROM BLEEDING OF OCT. 15, OR SECOND BLEEDING.				
9. 1 c.c. salt solution + 1/10 c.c. of immune serum No. 2 of second bleeding + laboratory typhoid	900	15	Sterile by microscope.	Sterile.
10. 1 c.c. salt solution + 1/100 c.c. of immune serum No. 2 + laboratory typhoid	345	10	"	1500
11. 1 c.c. salt + 1/1000 c.c. of immune serum No. 2 + laboratory typhoid	464	360	300	1500
12. 1 c.c. salt + 1/10000 c.c. immune serum No. 2 + laboratory typhoid	276	600	300	9000
13. 1 c.c. salt + 3 loops bouillon + laboratory typhoid	Control 950	950	1050	6300

TABLE No. 6.

SHOWING THE BACTERIOLYTIC EFFECT ON RACES OF TYPHOID NOT USED IN IMMUNIZING THE HOG. ALL + 3 LOOPS BOUILLON.	COLONIES IN AGAR PLATES.			
	No hours.	hours.	hours.	24 hours.
1. 1 c.c. salt solution + 1/10 c.c. serum No. 2 + Wassermann typhoid	840	480	2500	180
2. Same + 1/10 c.c. heated serum No. 2 + Wassermann typhoid	1200	1050	1570	30
3. 1 c.c. salt solution + 1/100 c.c. No. 2 serum + Wassermann typhoid	1800	840	1300	1800
4. 1 c.c. salt solution + 1/100 c.c. serum No. 2 heated + Wassermann typhoid	600	1200	570	6000
5. 1 c.c. salt solution + 1/10 c.c. serum No. 2 + orchitis typhoid	1200	1350	1390	Sterile.
6. 1 c.c. salt solution + 1/10 c.c. heated serum No. 2 + orchitis typhoid	1380	900	2040	60
7. 1 c.c. salt solution + 1/100 c.c. serum No. 2 + orchitis typhoid	1500	1200	1500	4800
8 1 c.c. salt solution + 1/100 c.c. heated serum No. 2 + orchitis typhoid	1500			
9. 1 c.c. salt solution + 1/10 c.c. serum No. 2 + typhoid from spleen	900	1500	900	1800
10. 1 c.c. salt solution + 1/10 c.c. serum heated No. 2 + typhoid from spleen	540	1500	1600	9000
11. 1 c.c. salt solution + 1/100 c.c. serum No. 2 + typhoid from spleen	12000	12000	830	510
12. 1 c.c. salt solution + 1/100 c.c. serum No. 2 heated + typhoid from spleen	480	600	760	12000
13. 1 c.c. salt solution + orchitis typhoid	540	900	2100	13200
14. 1 c.c. salt solution + spleen typhoid	1080	1200	1830	5400
	540	390	900	30000

duce fatal purulent peritonitis in doses of 2 cubic centimeters, when injected intraperitoneally into guinea-pigs weighing about 300 grams. A subcutaneous injection of 1.0 c.c. and 0.5 c.c. of a curative serum into each of three guinea-pigs protected these six animals against 2 c.c. of the bacillus No.1, and bacillus No. 4 injected intraperitoneally twenty-four hours later.

In order to determine whether the bacilli Nos. 1 and 4 were virulent and fatal for guinea-pigs in smaller doses than 2 c.c., two animals were inoculated with 1 c.c. of bacillus No. 1, and three animals were inoculated in the abdominal cavity with 0.5 c.c. of this bacillus. Similar inoculations were also made with bacillus No. 4. All of these animals died in from twenty-four to forty-eight hours of typical experimental typhoid fever except two guinea-pigs. One of these had received .5 c.c. of bacillus No. 1, and the other had received .5 c.c. of bacillus No. 4. From these experiments it was assumed that the serum would protect guinea-pigs against four times the minimal fatal dose of these typhoid bacilli. Five pigs were inoculated intraperitoneally with .5 c.c. of bacillus No. 1, and two died in twenty-four hours, while the other three died in from four to nine days of experimental typhoid infection. This confirmed the minimal fatal dose as .5 c.c.

As we wished to see whether smaller doses of the serum would protect guinea-pigs against the typhoid bacillus No. 1, we injected .1 c.c. of serum No. 3 subcutaneously, and in two days these animals were inoculated with doses beginning with .5 c.c. of typhoid bacilli and increasing to 4 c.c. All died in twenty-four hours except the .5 c.c. and 1 c.c. pigs, which survived. This showed that .1 c.c. of serum subcutaneously would protect only against twice the minimal fatal dose.

In order to increase the virulence of the laboratory stock culture of the typhoid bacillus, we introduced it inclosed in celloidin capsules within the peritoneal cavity of the guinea-pig, and allowed it to remain there for two weeks. This reduced the minimal fatal dose from 1 c.c. to .3 c.c., and this was the most virulent organism which we could obtain. We were compelled, therefore, to use much larger doses for comparative experiments than Abell and Loeffler, who used bacilli fatal in doses of 1/50 c.c.

Their experience also showed that if the serum was injected into the peritoneal cavity that it would protect against larger doses of typhoid bacilli than would subcutaneous injections of serum.

On July 25, 1901, five guinea-pigs were given .1 c.c. of serum No. 3 intraperitoneally, and in two days these animals were given .3-.5, .7-.8, and 1 c.c. of the bacillus whose minimal fatal dose was .3 c.c. All of the animals remained well for two weeks. On August 6 a second series of animals were given a similar dose of serum, and in two days they were given, respectively, 1 c.c., 1.5 c.c., 2 c.c., 2.5 c.c., and 3 c.c. of the same bacillus. The first two animals survived, showing that .1 c.c. of the serum No. 3 would protect against five times the minimal fatal dose of the typhoid bacillus, since this dose was .3 c.c. Five guinea-pigs inoculated with the same doses of bacilli after protection with .5 c.c. of serum gave even better results.

Only the 2.5 c.c. and 3 c.c. pigs died, showing that .5 c.c. of serum injected intraperitoneally will protect against about seven times the minimal fatal dose.

These animal experiments might be summarized by stating that the subcutaneous injection of the serum in doses of from 1-600 to 1-800 of the body weight will protect guinea-pigs against four times the minimal fatal dose of intraperitoneal injection with the typhoid bacillus. The injection of 1-3000 to 1-4000 of the serum by weight into the abdominal cavity will protect against five times the minimal fatal dose, and a dose of 1-600 to 1-800 of the body weight will protect against seven time the minimal fatal dose of the typhoid bacillus.

It was not expected that this serum would exhibit any marked antitoxic properties, but in order to determine this the typhoid bacillus was grown on blood

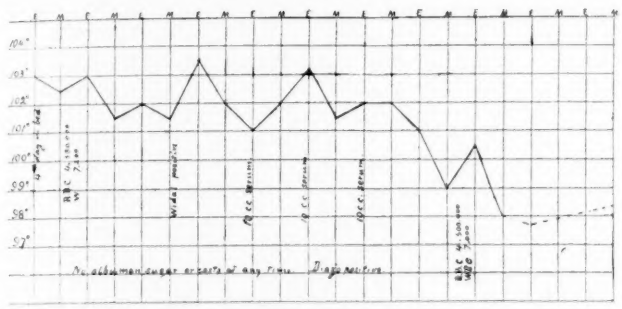

Chart 1.

serum and destroyed by a temperature of 60 C. for one hour. Five guinea pigs were inoculated with the usual suspension of 0.3-0.5, 0.8, 1 and 1.2 c.c of dead bacilli, and the last two animals died in twenty-four hours, while the others survived. The minimal fatal dose was therefore 1 c.c. of dead bacilli. Ten pigs were given 0.5 of serum, and were then inoculated with doses of dead bacilli varying from 0.8 c.c. of the suspension from the blood serum to 2.5 c.c. The two pigs given 2.5 c.c. and one pig given 1.5 c.c. died of tox-

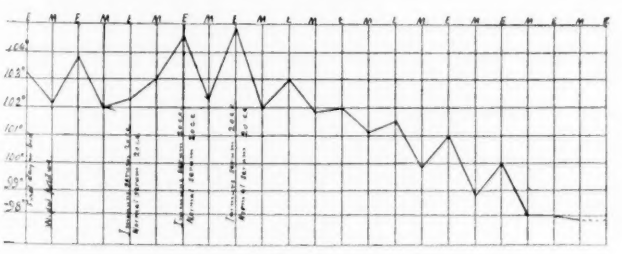

Chart 2.

emia in twenty-four hours, but the seven other pigs which had been given 2 c.c., 1.5 c.c., 1 c.c., and 0.8 c.c. dead bacilli survived the inoculation. The serum seems to protect against about twice the fatal dose of dead typhoid bacilli.

In addition to the above experiments, a number of tests were performed with polyvalent serum No. 1 from hog No. 4. The same suspension of a twenty-four hour blood serum growth of the typhoid bacillus in 4 c.c. of salt solution was used, and guinea-pigs were inoculated intraperitoneally with varying doses until the minimal fatal dose was found. The Wassermann bacillus was fatal to guinea-pigs weighing from 400 to 500 grams in doses which averaged about 100 cubic millimeters. One pig died of typical typhoid peritonitis from an intraperitoneal dose of 50 cubic millimeters, but 4 others remained well, while of 4 pigs all died when 100 cms. were used. One or two pigs recovered from 200 cms., while others died, and the minimal fatal dose of 100 cms. is only approximate. Three hundred cubic millimeters were invariably fatal.

Considering this as the correct minimal fatal dose, we injected 0.1 c.c. of a serum heated at 56 C. for one hour into the peritoneal cavity of a guinea pig, and similar doses of trikresolized and non-trikresolized serum were also used on other guinea-pigs. Two days later all of these animals received 1.5 c.c. of the Wassermann bacillus intraperitoneally, but they all remained well for two weeks.

These injections showed therefore that the polyvalent serum protected against 5 times the minimal fatal dose of the typhoid bacillus.

BACTERIOLYTIC ACTION OF THE IMMUNE SERUM.

A large number of tests were made with polyvalent serum No. 1, in order to test its effect in destroying

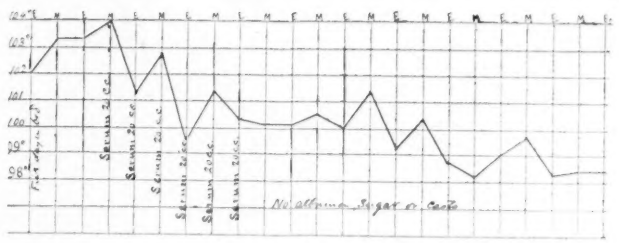

Chart 3.

the typhoid bacillus both alone and in contact with other normal sera of various animals. The animals were bled and the serum obtained free from contamination, although no trikresol was used, and the following technic was employed in testing the effect of the serum on *Bacillus typhosus*.

The various types of the typhoid bacillus were grown for twenty-four hours on the slanted surface of Loeffler's blood serum in a small test tube measuring 10 by 2 cms., and one loopful of the growth from a standard loop measuring 3 mms. in outside diameter was placed

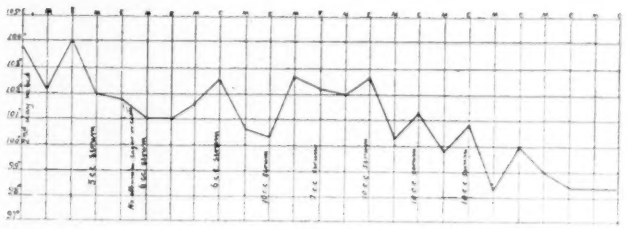

Chart 4.

in 10 cubic centimeters of normal salt solution. Two loopfuls of this suspension was always transferred to the various combinations of the sera. One loopful was always introduced into the melted agar used for the comparative plate cultures, and these were made at once, and at the end of 3-6, and twenty-four hours. The heated serum was exposed to 56 to 58 C. for one hour. This method forms a splendid way of estimating the destructive action of various sera on bacteria.

The preceding table No. 3 shows that both the Wassermann and the laboratory typhoid bacillus No. 6 were practically destroyed by 1 cubic centimeter of the immune hog serum even when heated, as shown by Nos. 1, 2, 3 and 4. It would seem from these experiments that the serum of the hog contains a complement which is not destroyed by 56 C. Nos. 5 and 6 show that un-

heated and, of course, heated rabbits' serum after twenty-four hours on ice, in which time the serum separated from the clot, is not destructive to the typhoid bacillus. It is interesting to note in 7 and 8 that heated immune serum will only inhibit the bacilli if 1/20 part of normal rabbit's serum be added. Equal parts of immune and rabbit's serum are not destructive. Experiments 10 and 11 show that small quantities of immune serum cannot make effective combinations with rabbit complement in destroying the typhoid bacillus, although later experiments demonstrated that these small amounts of immune serum were effective when mixed with bouillon, human serum, and dog's serum. The immune serum was used from the first bleeding of the hog, and the plates were kept forty-eight hours before counting them.

Table No. 3 also shows that dog serum is absolutely destructive to different races of the typhoid bacillus, as shown by 12 and 13, but 14 to 17 show that the immune body can not form an effective combination in bacillus, yet when the immune serum is heated to 56 C. it forms a combination with the hog serum which almost completely destroys the bacilli. Smaller quantities than 1/10 of a c.c. were not effectual. All of the other experiments show that various combinations of normal hog serum, and immune serum are not destructive, but No. 12 shows that heated immune serum is destructive to these bacteria. The effect of heated serum in destroying the typhoid bacillus may be due to setting free the complement by heat, as Kyes found in regard to snake venom complement.

Table No. 5 shows the comparative effect of serums from the first and second bleeding of the hog. This bleeding has been previously described in the section describing the injections of the hog. These had been kept on cold storage for some time, and seem to have lost part of their strength, although 1/10 of a c.c. of both heated and unheated serum were still effective in destroying typhoid bacilli.

The typhoid bacillus (see table No. 6) from a typhoid

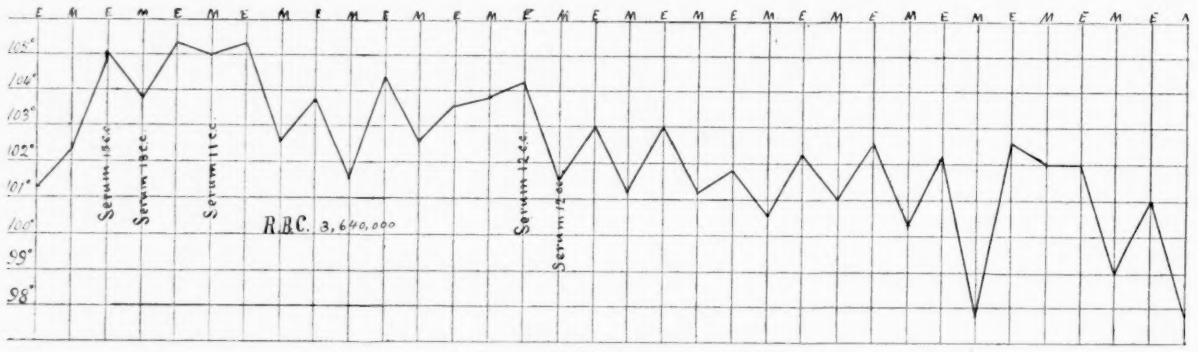

Chart 5.

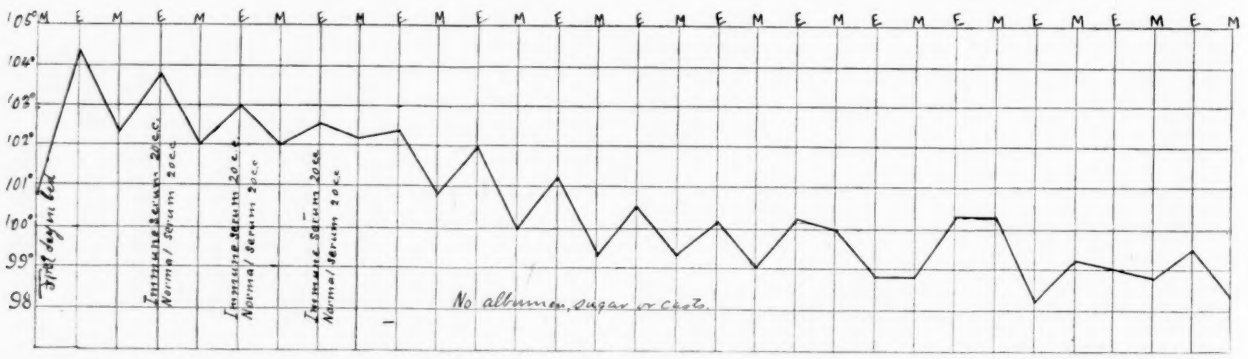
Immune Serum 20 c.c. Normal Serum 20 c.c.
Immune Serum 20 c.c. Normal Serum 20 c.c.
Immune Serum 20 c.c. Normal Serum 20 c.c.
No albumen, sugar or casts.

Chart 6.

heated serum. Experiment 19 shows a curious phenomenon, namely, that although unheated immune serum in heated dog's serum is not destructive to the typhoid bacillus (see 16), yet if the immune serum is also heated to 56 C. it forms a combination with the heated dog's serum which almost entirely destroys the bacilli. Greater dilutions than 1 to 10 were not effective. Twenty-two, 23 and 24 simply show again the bacteriolytic effect of unheated dog serum on the typhoid bacillus.

On examining the preceding table No. 4, it will be seen that normal hog serum, and, of course, heated serum, are not destructive to the typhoid bacillus, as shown by 1, 2, 3 and 4. Nos. 5, 6, 7 and 8 all show that varying amounts of hog and immune serum are equally as ineffective, but No. 7 shows a curious phenomenon. Although the immune serum and the complement of hog serum will not act against the typhoid orchitis, and from the spleen of a fatal case were tested along with the Wassermann organism in order to see whether the serum was destructive to a typhoid organism which had not been used in immunizing the animal. It will be seen that Nos. 5 and 6 give the most satisfactory bacteriolytic results, and this was exerted on an organism which had not been used for injecting the hog. It had little or no effect on the organism isolated from the spleen, as shown by Nos. 9 and 10.

RESUME OF THE BACTERIOLYTIC ACTION OF THE SERUM.

These experiments might be summarized by stating that one cubic centimeter of immune serum, even after being heated to 58 C., was completely destructive to the typhoid bacillus, while control cultures in twenty-four hours showed from 50,000 to 100,000 colonies. Normal hog serum was not destructive to *Bacillus typhosus*. The tests also showed that similar results were obtained

if either heated or unheated immune serum in quantities as small as 1/10 of a cubic centimeter were added to 9/10 of a c.c. of bouillon, or salt solution and bouillon containing the typhoid bacillus. Heating to 58 C. did not destroy the bacteriolytic effect of the serum, as the plates were absolutely sterile, while the controls numbered about 50,000 colonies.

Heated and unheated serum 1/10 of a c.c. plus 9/10 c.c. of bouillon were also used on two cases of typhoid bacilli which were not used in producing the serum, and they completely or almost completely destroyed the organism in twenty-four hours. Even equal parts of human and immune hog serum showed no hemolysis, and the immune serum was bacteriolytic when mixed with human serum in 1 part to 9 of human serum.

HEMOLYTIC EXPERIMENTS.

Experiments in hemolysis were performed with human blood from the placenta. The blood was washed three times in normal salt solution after centrifugalizing each time and pouring off supernatant fluid.

One to 12 inclusive, after three hours in incubator at 37 C., showed a clear supernatant fluid, and bright arterial red sediment. This examined under microscope consisted of normal red blood corpuscles, 16 to 19, inclusive, showed similar condition. Thirteen, 14 and 15 showed a darker venous red sediment which resembled a partially decomposed clot, and under the microscope the red blood corpuscles were of normal appearance, but showed distinct agglutination.

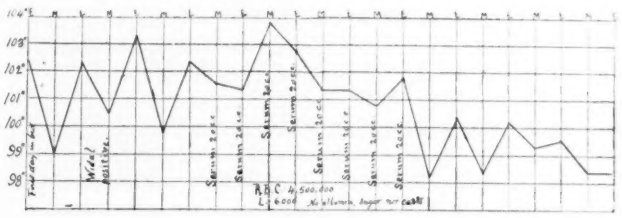

Chart 7.

All were then placed in incubator for five hours and condition was the same except 13, 14 and 15.

TABLE No. 8.

Human Serum from Umbilical Cord.	Colonies in Agar Plates.		
	No hours.	6 hours.	24 hours.
1. 0.5 c.c. serum + laboratory typhoid + 0.5 c.c. salt solution....	1020	Sterile.	Sterile.
2. 0.5 heated serum 58 C. + laboratory typhoid + 0.5 c.c. salt solution	600	9000	Innumerable.
3. 0.5 c.c. human serum + 0.01 c.c. immune serum + 0.5 c.c. salt + laboratory typhoid.....	420	Sterile.	Sterile.
4. 0.6 c.c. serum + 0.01 c.c. immune serum + 0.5 c.c. salt + laboratory typhoid.....	400	"	"
5. 0.7 c.c. serum + 0.01 c.c. immune serum + 0.5 c.c. salt + laboratory typhoid.....	750	"	"
6. 1 c.c. serum + 0.1 c.c. immune + laboratory typhoid.....	600	"	"
7. 0.5 immune serum + 0.01 c.c. human + 0.5 c.c. salt + laboratory typhoid	180	750	"
8. 0.6 immune serum + 0.01 c.c. human + 0.5 c.c. salt + laboratory typhoid	600	300	"
9. 0.8 immune serum + 0.01 c.c. human + 0.2 c.c. salt + laboratory typhoid.....	720	75	"
10. 1 c.c. immune serum + 0.01 c.c. human + 0.2 c.c. salt + laboratory typhoid.....	600	345	"
11. 1 c.c. human serum + 0.1 c.c. immune serum + laboratory typhoid	600	Sterile.	"
12. 1 c.c. heated human serum + 0.1 c.c. immune serum + laboratory typhoid	750	800	5000
13. 1 c.c. human serum + 0.01 c.c. immune serum + laboratory typhoid	450	Sterile	Sterile.
14. 1 c.c. human heated serum + 0.01 c.c. immune serum + laboratory typhoid	3000 (½ c. c.)	6000	Innumerable.
15. 1 c.c. salt solution + 1/10 c.c. immune serum + laboratory typhoid	1200	1200	12

A microscopic examination of the sterile tubes shows no bacteria present showing complete bacteriolysis.

Three cubic centimeters were then placed in each of 15 tubes. The fluid represented 2 c.c. of pure blood + 8 c.c. of sterile solution.

Varying amounts of serum heated at 56 C. sterile serum No. 2, and trikresolized serum No. 2 were added to these tubes; they were then placed in the thermostat for three hours, and then placed on ice for 12 hours.

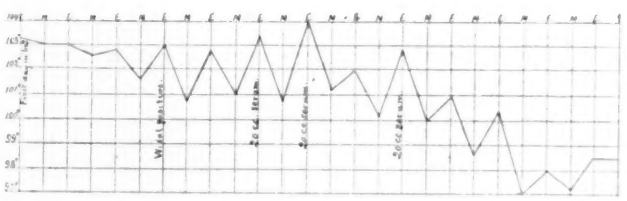

Chart 8.

TABLE No. 7.—HEMOLYTIC WORK. HUMAN BLOOD.

	Hemolysis.
1. 3 c.c. blood + 0.03 c.c. of heated serum.....	0
2. 3 c.c. blood + 0.3 c.c. of heated serum.....	0
3. 3 c.c. blood + 0.6 c.c. of heated serum.....	0
4. 3 c.c. blood + 1.5 c.c. of heated serum.....	0
5. 3 c.c. blood + 3 c.c. of heated serum.....	0
6. 3 c.c. blood + 0.03 c.c. of serum No. 2.....	0
7. 3 c.c. blood + 0.3 c.c. of serum No. 2.....	0
8. 3 c.c. blood + 0.6 c.c. of serum No. 2.....	0
9. 3 c.c. blood + 1.5 c.c. of serum No. 2.....	0
10. 3 c.c. blood + 3.00 c.c. of serum No. 2.....	0
11. 3 c.c. blood + 0.03 c.c. trikresolized serum No. 2.....	0
12. 3 c.c. blood + 0.3 c.c. trikresolized serum No. 2.....	0
13. 3 c.c. blood + 0.6 c.c. trikresolized serum No. 2.....	?
14. 3 c.c. blood + 1.5 c.c. trikresolized serum No. 2.....	?
15. 3 c.c. blood + 3 c.c. trikresolized serum No. 2.....	?
16. 3 c.c. blood + 0.003 c.c. trikresolized serum No. 2.....	0
17. 3 c.c. blood + 0.006 c.c. trikresolized serum No. 2.....	0
18. 3 c.c. blood + .009 c.c. trikresolized serum No. 2.....	0
19. Control.	0

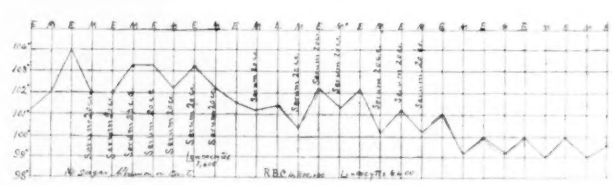

Chart 9.

In these the supernatant fluid was cloudy and the sediment chocolate brown, and on shaking up the fluid it became chocolate brown.

Under the microscope in 13, 14 and 15, about one-third of the red blood cells consisted of a clear colorless disc containing a few scattered yellow granules of hemoglobin. This effect is probably due to the trikresol, and not to the serum.

After twelve hours on ice the condition was the same. These experiments show that the immune hog serum has no injurious effect on red blood corpuscles, and the normal number of red blood corpuscles in the counts on our clinical cases also bears out this point.

immune body, or amboceptors. No. 15 shows the destructive effect of 1/10 c.c. of immune serum alone.

CLINICAL OBSERVATIONS.

Before recording our own observations we shall briefly record the work which has been previously performed by others in treating cases of typhoid fever with a curative serum.

Chantemesse[9] prepared a serum from horses by injecting them with a toxin prepared by filtering the

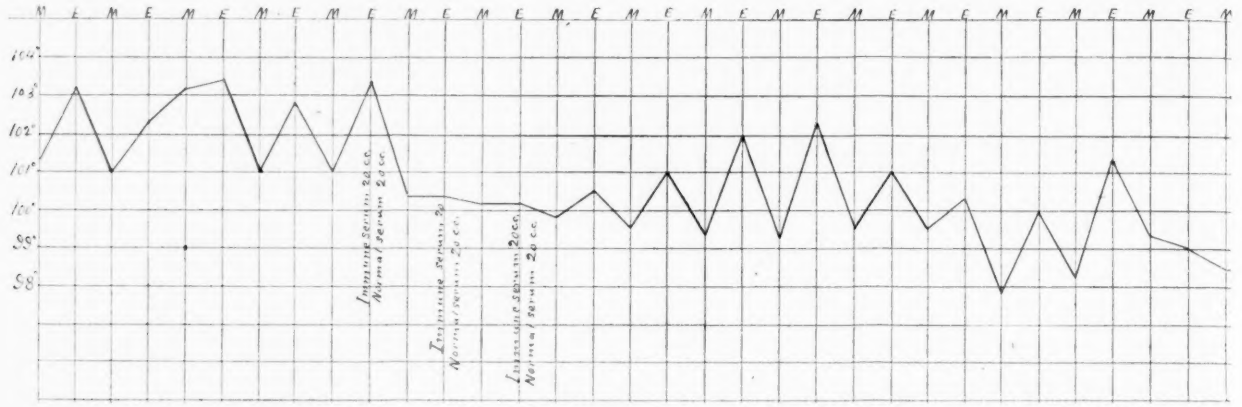

Chart 10.

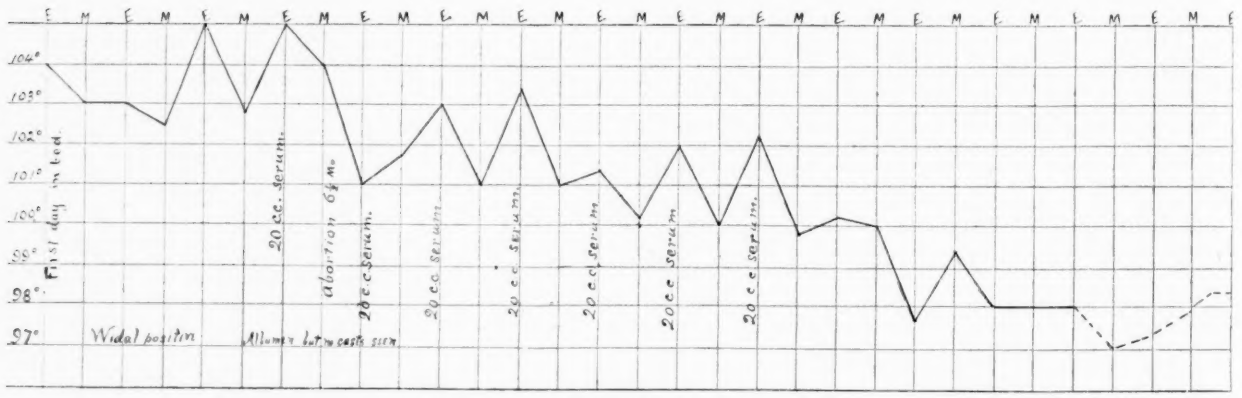

Chart 11.

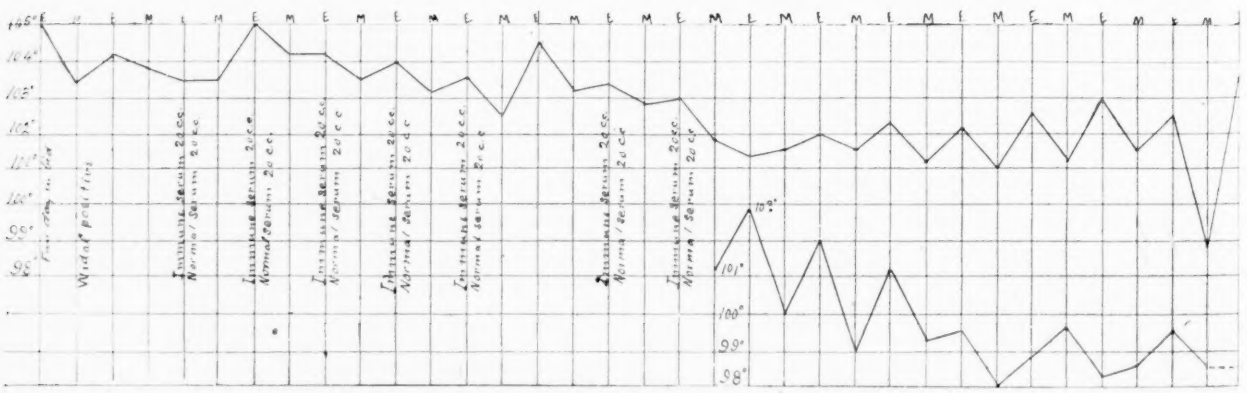

Chart 12. Temperature not influenced by serum.

Table No. 8 shows that human serum is quite destructive to the typhoid bacillus, and that quantities varying from 1/10 to 1/100 of a c.c. of immune hog serum find a congenial complement in the human serum. This also shows that one-tenth part of the immune hog serum does not cause any deviation or side-tracking[8] of the complement, by means of an excessive amount of fluid cultures. This serum in doses of .01 of a cubic centimeter prolonged the lives of guinea-pigs injected with varying doses of the soluble filtrate. He thinks that this serum is antitoxic, since its injection renders animals more resistant toward the soluble poison.

Chantemesse found that the general fatality from typhoid fever in the Paris hospitals was about 19 per cent., but in 186 cases which were treated with the se-

8. As for us, I know this term was prepared by Dr. Harry T. Marshall, of Johns Hopkins University.

9. Chantemesse: La Presse Med., No. 103, Dec. 24, 1902.

rum the fatality was only 3 per cent. He attributed this reduction to the use of the serum. The seven fatal cases had either peritonitis, hemorrhages or perforation.

Professor Tavel[10] of Berne has also used an immune serum in the treatment of typhoid fever, which is prepared by incubating 1.5 liters of a bouillon typhoid culture for two weeks, and then adding 0.5 per cent. of carbolic acid. This kills the bacilli and releases the intracellular poisons. Two horses were injected with gradually increasing doses of this bouillon until 150 c.c. could be taken. Later mixed dead cultures of four different races of typhoid bacilli were used, and at last living mixed cultures were injected. The serum was thus made polyvalent.

Tavel[10] has recorded 4 cases in which he used from three to six injections of his serum. In all of these cases the plateau stage of the fever was greatly lessened, and this was rapidly followed by the stage of decline. The pulse and respiration also fell with the temperature, and no unfavorable symptoms were noted. These four cases reached a normal temperature in 18, 20, 18, and 13 days respectively. He noted a fall of temperature often twenty-four hours after the injection of the serum, but found that a future rise of temperature had to be again combated by further injections.

Our series included 23 cases with two deaths. Autopsies were not obtained in either of the fatal cases.

CASE 1.—The first was a boy of 14, who had been in the hospital ten days when the injections were begun. He received eight doses of 10 c.c. each in four days. After the serum treatment began the boy developed a bullous dermatitis. The injections appeared to cause some decline in temperature, but in the middle of his third week in the hospital he developed otitis media followed by streptococcus septicemia, which proved fatal. (Chart 1.)

The other fatal case was seen in private practice.

CASE 2.—Man, aged 44, overfat, a civil engineer. He was seen in the beginning of his attack, having a temperature of 100 degrees.

Treatment.—Two days later his blood gave a distinct and prompt Widal reaction, and on the following day serum treatment was begun. His urine was not examined before the first dose of serum was injected, but was found to contain albumin and casts immediately after. He received in five days six doses of serum, 90 c.c. in all. After the third injection of serum the temperature began to drop and we were inclined to think that good results were to follow, but the temperature rose to 103 degrees on the thirteenth day in bed and the fifth day after the last injection. Intestinal hemorrhages appeared on the fourteenth day in bed. There were several copious losses on this day. Two days later hemorrhage reappeared, and on the night of the nineteenth day in bed he died.

Among the 21 cases ending in recovery, there were 15 in which we considered that the influence of the serum contributed to the favorable result. The temperature charts of 10 of these cases are shown. The cases in which no effect for good or evil was observed were 6 in number, and one of these is illustrated by a temperature chart.

One of the distinctly favorable cases was that of a young married woman of 23, who was six and a half months' pregnant. She aborted on the evening of the day when the first injection was given, but completed her defervescence in fourteen days. (Chart 2.)

One of the cases admitted to Johns Hopkins on the fourth day in bed was defervescent in ten days after admission, or on the fourteenth day in bed. No unfavorable effects on the kidneys or blood were reached by urinalysis or blood counts in any of the cases. The average period from admission to defervescence was in thirteen favorable cases, 12.6 days.

The laboratory experiments coincided with the clinical observations that the immune hog serum is not hemolytic for human blood. In one or two instances we encountered discouragement from associated clinicians who feared injury to the kidneys or hemolysis from the use of such large amounts of serum. In one case we stopped the serum in deference to the suspicion that it caused collapse. This patient was a sailor who came to the City Hospital in an exceedingly feeble state, having had diarrhea on ship board for two weeks. He was exceedingly depressed after each bath. The use of serum was, however, resumed after an interval of days, though tubbing was not resumed. The case appeared to be one of those favorable to the use of the serum.

CONCLUSION.

In conclusion, we believe that by the use of this serum the febrile period may be shortened, and the daily variation may be favorably modified.

DISCUSSION.

DR. CHARLES C. YARBROUGH, Detroit—In the experiments on hogs, was any air injected? If so, what results were observed from it?

DR. WILLIAM ROYAL STOKES—As we could not always shut off the injection just at the moment because it went in under rather heavy air pressure, air certainly got in; we noted an emphysematous condition of the tissues at times, but we did not see the slightest unfavorable results. It is hard to kill a hog.

DR. CHARLES C. YARBROUGH—The general opinion among the profession is that the injection of air is very dangerous. The average physician is very careful when he makes hypodermic injections, especially injections of serum, to see that every particle of air is expelled from the syringe before making the injection. A large number have a great dread of injecting even the minutest quantity of air. This dread, I believe, is wholly unfounded.

DR. JOSEPH MCFARLAND, Philadelphia—I have intentionally injected air under the skin of 16,000 guinea-pigs without noticing any unfavorable result. I did that in order to drive out of the hypodermic syringe every particle of mixture of diphtheria toxin and antitoxin in order to test the value of it.

10. Tavel: Schweizerisches Serum und Impf.-Inst., März, 1899.

LEAD POISONING.

A STUDY OF THE GASTRIC CONTENTS IN TWELVE CASES.*

JOSEPH SAILER, M.D., AND JOHN M. SPEESE, M.D.
PHILADELPHIA.

Last winter during my service at Blockley a patient was admitted suffering from severe intestinal colic due to chronic lead poisoning. In the hope of obtaining some information on the nature of the colic, a test-meal was obtained, and the findings were so interesting that, at my suggestion, my resident physician, Dr. John Speese, obtained test-meals of all the cases of lead poisoning that were available during the rest of the winter. The results were so nearly uniform that it seems unlikely that a more extended series of investigations will show any material difference. The technic was as follows: Usually with, sometimes without, a preliminary washing, the patient was given a test-meal of two slices of bread and about twelve ounces of water. One hour after the patient commenced eating, the stomach contents were withdrawn by aspiration, measured

* Read before the medical section of the College of Physicians.

and tested for free acid with Congo red, then filtered and examined. The total acidity was tested with decinormal soda solution, using phenolphthalein as an indicator, the first permanent pink being employed to determine the degree of acidity. Free hydrochloric acid was tested for qualitatively by Congo red and phloroglucin vamillin, and quantitatively by dimethylamidoazobenzol occasionally using Günzberg's reagent as a control. Lactic acid was tested for with Uffelmann's reagent, using the reaction produced in another tube with a dilute solution of lactic acid for comparison. Pepsin was estimated by a slight modification of Hammerschlag's method, as follows: The white of one egg (about 30 cm.) was dissolved in 1,000 c.c. of 0.4 per cent. HCl. To 10 cm. of this solution 5 cm. of filtered gastric juice were added, and to another 10 cm., 5 cm. of distilled water. The tubes were plugged, placed in the incubator for one hour, and the percentage of albumin estimated by centrifugation after precipitation with acetic acid and potassium ferrocyanid, according to Purdy's method. Hammerschlag's method has been subjected to a considerable degree of criticism, and has been as warmly defended. Undoubtedly, it does not give accurate, merely approximate results, but no method hitherto devised for the estimation of pepsin that is clinically applicable does any more than this. As a clinical test it certainly seems satisfactory. Dr. Speese and Dr. Lavenson performed it nearly 200 times last winter on different cases of gastric disease, and in nearly all instances it conformed very closely to what would theoretically have been expected. Most conservatively estimated, it suffices to show at least three degrees of peptic digestion, i. e., "none," " little" and "much," and its most enthusiastic supporter will hardly claim that the range of error is less than 10 per cent. in either direction. It can not, therefore, be considered scientifically accurate, but absolute accuracy is not essential. In all cases microscopic examination was made for the presence of the Oppler-Boas bacillus, and wherever possible the blood stained for basophilic degeneration, but this, unfortunately, could not be done in every case. The cases are as follows:

CASE 1.—J. S., male, aged 26, Russian, a painter. A satisfactory history was not obtainable. The symptoms were a blue line on the gums, constipation, abdominal pain and vomiting. Blood: Hemoglobin, 68 per cent; white blood cells, 5,000; red blood cells, 3,100,000. Granular degeneration of reds present.

GASTRIC ANALYSIS.

	First.	Second.
Total acidity	17	10
Free HCl	Absent	Absent
HCl deficit	10	13
Lactic acid	Present	Present
Pepsin	50%	20%
Oppler-Boas	Negative	Negative

CASE 2.—P. C., male, aged 40, leadworker. He had lead colic four years ago, when he stopped working in lead; he returned to it three weeks ago, with a recurrence of symptoms. These were constipation, pain in the abdomen, blue line on the gums and nausea.

GASTRIC ANALYSIS.

Total acidity	10
Free HCl	Absent
HCl deficit	10
Lactic acid	Present
Pepsin	8%
Oppler-Boas	Negative

CASE 3.—T. M., aged 44, white, paint mixer. He had had lead poisoning in 1899 and a second attack in 1902, with wrist-drop, which became bilateral in 1904. There was abdominal pain, constipation, fetid breath, a blue line on the gums, and wrist-drop. After one hour's digestion of an Ewald meal, 3 ounces were recovered containing some undigested food, mucus and blood.

GASTRIC ANALYSIS.

Total acidity	8
Free HCl	Absent
HCl deficit	12
Lactic acid	Present
Pepsin	10%
Oppler-Boas	Negative

CASE 4.—F. R., aged 44, white, Ireland, a painter. He had had several previous attacks of lead colic and on admission complained of pain in the abdomen and constipation. There was a blue line on the gums and anemia. The blood showed granular degeneration of red blood cells. The Ewald meal was given; one hour's digestion; two ounces withdrawn containing a few particles of undigested food, no blood nor mucus.

GASTRIC ANALYSIS.

	First.	Second.*
Total acidity	10	16
Free HCl	Absent	Absent
HCl deficit	18	14
Lactic acid	Present	Present
Pepsin	Absent	Absent
Oppler-Boas	Negative	Negative

* Second admission with same symptoms.

CASE 5.—W. R., aged 43, white, leadworker. The symptoms were anemia, constipation, a blue line on the gums, and, in addition, acute mania. The blood showed granular degeneration of the red cells.

GASTRIC ANALYSIS.

Total acidity	6
Free HCl	Absent
HCl deficit	8
Lactic acid	Present
Pepsin	6%
Oppler-Boas	Negative

CASE 6.—J. C., aged 42, white, painter. The symptoms were a blue line on the gums, constipation, abdominal pain, anemia and weakness in the muscles of the arms.

GASTRIC ANALYSIS.

Total acidity	13
Free HCl	Absent
HCl deficit	18
Lactic acid	Present
Oppler-Boas	Negative

CASE 7.—T. R., painter, aged 26, Philadelphia. The patient had never had symptoms of lead poisoning, although he had worked at this trade for several years. He was somewhat anemic, slightly constipated, and had a blue line on the gums. He was admitted with pneumonia, and a test meal was given as an experiment. It was retained for one hour and two and a half ounces withdrawn; it was white in color and the digestion was complete. There was no blood but some mucus.

GASTRIC ANALYSIS.

Total acidity	34
Free HCl	25
Lactic acid	Absent
Pepsin	100%
Oppler-Boas	Neg.

CASE 8.—J. C., ward 5. He has been a lead worker for several years, although there is no history of a previous attack. He complained of pain in the abdomen, constipation; there was a blue line on the gums, loss of power in the left arm, with some atrophy of the muscles, but no wrist-drop. There was granular degeneration present in the blood; reds, 3,600,000; whites, 6,000. Toast and water, one hour's digestion, one and a half ounces recovered, partially digested, no blood, no mucus. On washing, a considerable amount of food was recovered.

GASTRIC ANALYSIS.

	First.	Second.
Total acidity	14	9
Free HCl	Absent	Absent
HCl deficit	14	10
Lactic acid	Present	Present
Pepsin	Absent	Absent
Oppler-Boas	Suggestive	

CASE 9.—E. S., aged 34, white, lead burner. He had never had any previous attack of lead poisoning. The symptoms began several weeks before admission. He first noticed constipation, followed by severe abdominal pain centering at the umbilicus. There was a blue line on the gums, loss of power in the left arm and hand, but no wrist-drop. He has worked

steadily at his trade for the past sixteen months. Toast and water given, digestion one hour. About an ounce recovered, consisting of a few particles of undigested food, but no blood or mucus. On washing a small amount of undigested food was recovered.

GASTRIC ANALYSIS.

	First.	Second.
Total acidity	12	11
Free HCl	Absent	Absent
HCl. deficit	12	5
Lactic acid	Present	Present
Oppler-Boas	Negative	
Pepsin		7%

The blood showed degeneration of the red blood cells.

CASE 10.—M. H., aged 46, white, Ireland. He has worked in lead and brass. He had lead poisoning one and a half years ago. Three months ago he developed pain in the abdomen, weakness in the arms and legs, and a blue line on the gums. The active symptoms of lead poisoning have disappeared, and the chief trouble at present is due to paralysis and weakness of the muscles of the arms. No granular degeneration in the blood. Ewald meal, one hour digestion, three ounces recovered. Some undigested food and mucus, but no blood.

GASTRIC ANALYSIS.

Total acidity	9
Free HCl	Absent
HCl. deficit	8
Lactic acid	Present
Pepsin	25%
Oppler-Boas	Negative

CASE 11.—J. F., white, aged 42, Ireland. He had lead poisoning five years ago, and has been a lead worker at intervals for the past seven years. He complains of general weakness, pain in the abdomen, headache, vertigo, anorexia and weakness of the wrists. Ewald meal, one hour digestion; watery contents and undigested food. No mucus or blood.

GASTRIC ANALYSIS.

Total acidity	9
HCl. deficit	9
Lactic acid	Present
Pepsin	Absent
Oppler-Boas	Negative

CASE 12.—G. E., white, aged 39, Sweden. He had been a lead worker for three weeks; he had been very careless about his habits. He developed severe abdominal pain, which was present on admission, constipation, and had a slight blue line on the gums. His appearance was anemic. Blood: Hemoglobin, 61 per cent.; red blood cells, 3,290,000; white blood cells, 11,800. Basophilic degeneration of the red cells. Ewald meal, one hour digestion. Slight amount of mucus, some undigested food, and no blood, regained. Two ounces recovered. On washing a considerable amount of food was recovered.

GASTRIC ANALYSIS.

Total acidity	35
Free HCl	8
Lactic acid	Negative
Pepsin	40%
Oppler-Boas	Negative

SUMMARY OF GASTRIC ANALYSES.

No.	Total Acidity.	Free Acid.	HCl. Deficit.	Lactic Acid.	Peptic Digestion.	Oppler-Boas.	Granular Degeneration.
7	34	25	0	0	100%	Neg.	
12	35	8	0	0	40%	Neg.	Present.
1	17	0	10	Present.	50%	Neg.	Present.
1	10	0	13	Present.	20%	Neg.	
2	10	0	10	Present.	8%	Neg.	
3	8	0	12	Present.	10%	Neg.	
4	10	0	18	Present.	0	Neg.	Present.
4	16	0	14	Present.		Neg.	
5	6	0	08	Present.	6%	Neg.	Present.
6	13	0	18	Present.		Neg.	
8	14	0	14	Present.	0	Sug.	Present.
8	9	0	10	Present.	0		
9	12	0	12	Present.	7%	Neg.	Present.
9	11	0	5	Present.			
10	9	0	8	Present.	23%	Neg.	Absent.
11	9	0	9	Present.	0	Neg.	

These twelve cases fall naturally into two groups, the first comprising Cases 7 and 12, and the second, Cases 1 to 6 and 8 to 11, inclusive. Case 7 may be dismissed briefly. It is probably not a case of lead poisoning, the only symptom being the blue line on the gums, which is occasionally seen on workers in lead apparently as a result of a deposit of dust containing lead on the mucous membranes. His gastric analysis was practically normal. Case 2 was evidently one of acute lead poisoning. The man had only worked in lead for three weeks; the symptoms were moderate, but the basophilic degeneration of the reds may be accepted as proof that intoxication had occurred. The gastric analysis showed a mild degree of subacidity, and a rather pronounced reduction in the activity of the pepsin. The remaining 10 cases are all examples of achylia gastrica, or of subacidity with reduction of the pepsin. Altogether, 14 test-meals were obtained, which gave the following results:

SUMMARY OF TEST MEAL RESULTS.

The total acidity varied from 6 to 17; the average was 11.

Free hydrochloric acid was absent in every analysis.

The deficit of hydrochloric acid varied from 5 to 18; the average was 11.5.

Lactic acid was present in every case. No quantitative estimations were made.

The peptic digestion was absent in three cases. It was 50 per cent. of normal in the first test meal of the first case and 20 per cent. of normal in the second test meal of this case. In Case 10 it was 23 per cent. of normal and in the remaining cases it varied between 6 per cent. and 10 per cent. of normal.

The Oppler-Boas bacillus was not found. In Case 8 it was reported as suggestive but the mere finding of a few long, thick bacilli can not be regarded as indicating its existence, at least not in the typical manner that occurs in carcinoma.

The red blood cells were stained for basophilic degeneration in seven cases. In six cases it was present (Cases 1, 4, 5, 8, 9 and 12), and in one case it was not found (Case 10).

In the cases of achylia and subacidity abdominal pain was noted in every case excepting the fifth.

The blue line on the gums was present in every case excepting the eleventh.

Constipation was present in eight cases; anemia in four.

One patient had vomiting, and one complained of nausea.

Unfortunately, the absence of symptoms was not noted, and it is impossible to be sure that these statistics are accurate. Lead encephalopathy was present in one case; weakness of the arms, sometimes amounting to wrist-drop, was present in six cases.

The duration of these cases was fairly long. Four of them had had previous attacks at various intervals up to nine years. In two cases the duration was not noted excepting the statement "for some time;" in all the others the duration was a year or more.

I have made a careful study of the literature in order to discover confirmation of these investigations, and have been unable to do so. I have gone in vain through the *Archiv für Verdauungskrankheiten*, including the abstracts from the literature, and through most of the recent text-books on the subject. Von Jaksch fails to mention it. It seems to me curious, in view of the pronounced digestive symptoms produced by lead, that this is the case.

Of course, a small series of cases is not decisive, but it seems fair to expect that in the majority of cases of chronic lead poisoning, or intoxication, disturbance not only of the gastric secretion, but (when they can be tested) of other forms of secretion, will be found. It is one of the misfortunes of the present day in clinical medicine that we have no means of obtaining the pancreatic secretion; but the salivary secretion may be obtained, and I hope to investigate it in a subsequent series of cases.

The mechanism by which this alteration of secretion is brought about is not clear. Whether it is merely a

functional disturbance of the glands, or whether there is actually some anatomic alteration, is not known. I have been entirely unable to obtain portions of the stomach from a fatal case of lead poisoning in order to determine this point, but the opportunity will certainly arise in the course of time.

The only conclusions that are at present justifiable appear to be:

1. In a series of 12 cases of lead poisoning, or suspected lead poisoning, there was deficiency in the secretion of HCl in 10 of the chronic cases, and no deficiency in 2, one of which was doubtful and the other acute.

2. This deficiency in the secretion of free HCl in the majority of cases is associated with an extreme reduction in the percentage of peptic digestion, and with the presence of lactic acid.

3. It is not justifiable at present to regard it as an indication for treatment, at least not until the effects of the ordinary treatment for achylia gastrica in cases of lead poisoning have been tested.

BRAIN HEMORRHAGE.*

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While brain hemorrhage is not of common occurrence, it happens with sufficient frequency to make its discussion of more than passing interest to the general practitioner. In this paper I shall take into consideration only those cases which are the result of degeneration of the arterial tunics.

Degenerative changes in the coats of the blood vessels were noticed and commented on in the early days of medicine by Lobstein, who gave it the name by which it has since been known—arteriosclerosis. Morgagni and Senac also speak of it. To Rokitansky and Virchow and, more recently, to Thoma we are indebted for a thorough investigation of the nature of the process, which I shall not take the time to discuss. I shall assume that the pathologic changes in arteriosclerosis and atheroma are practically the same—differing only in degree. In the small arteries of the brain substance we find minute aneurismal pouches caused by the gradual giving way of the diseased coats. As these blood vessels possess no true outer coat, their dilatation under the combined influence of disease and increased blood pressure becomes an easy one. Of capillary hemorrhages following the plugging of a vein I shall not speak, and while hemorrhage from a vein may occur, hemorrhage is practically always from an artery. It will not be amiss, I think, but profitable to notice at the outset some of the causes that lead to changes in the coats of the blood vessels. These alterations may result from a multiplicity of conditions, some of which are fairly well understood, while others are decidedly obscure. When we think of arterial degeneration, we are too prone, I fear, to picture to ourselves an old man who has lived his allotted time on earth and in whom decay and deterioration are plainly visible in every body cell. This is a fatal error. Arterial degeneration may and often does take place, from causes we can not well fathom, in those who are comparatively young; and that it does occur in these cases is patent to all who have had a fairly wide clinical experience.

That the consumption of large quantities of alcoholic beverages is a potent factor in bringing about this degeneration has been recognized for years. It is true that not all who use alcohol in its various forms have disease of the arterial coats, but it is found too frequently in this class of cases to be more than a mere coincidence. Not only does this poison affect the blood vessels, particularly of the brain, but also, in consequence of the effect of the alcohol on the glands and mucous membrane of the stomach and liver, poisons of varying degrees of intensity and non-oxidizable in character are found circulating in the body fluids, and we have this secondary cause added to the primary, with greater or less disease in the coats of the blood vessels.

I am satisfied that among business men, weighted with the responsibilities of large enterprises, who think long and persistently and yet drink constantly, these phenomena are most marked and come on earliest. At the last session of the American Medical Association, Cabot[1] of Boston read a paper in which he brought forward statistics to prove that alcohol is not the potent factor in the production of arterial degeneration that it is supposed to be; and yet the experience of the profession as a whole lends color to the belief that alcohol is, both directly and indirectly, a cause of this condition. Indeed, those who do not use alcohol in any of its forms but who lead a strenuous life, with but little freedom from worry and anxiety and with practically no exercise, become prematurely old and have premature vascular decay. In these cases, in some mysterious way, chemic or otherwise, toxins are developed which slowly but nevertheless surely bring about arterial degeneration. Or it may be, as has been suggested by Romberg, that the irregular blood pressure caused by an unstable and overwrought nervous system is the cause.

Next to alcohol as a factor in the production of these pathologic changes stands syphilis, and like alcohol its evil effects are seen in a most pronounced way in the blood paths of the brain. The syphilitic poison, whatever it may be, interferes with the nutrition of the walls of the blood vessels, destroying in a measure their elasticity, and thereby allowing them to become weakened and dilated. In some cases we may find both alcohol and syphilis operating as causes, as in a case I have under observation now.

In brain hemorrhage, chronic interstitial nephritis with its unknown antecedents should always be thought of and looked for, and is next in importance to the causes I have already assigned. In this disease, as prominent symptoms there are marked changes in the walls of the blood vessels, increased peripheral tension, followed by cardiac hypertrophy with its augmented potential energy. Whether the degeneration of the blood vessels is primary and the kidney lesion secondary or vice versa, I can not say. It is certain that toxic substances circulating through the blood and not eliminated by the kidneys, must sooner or later produce this form of degeneration. Indeed, these poisons bring about destructive changes in the kidneys in the same manner as in the coats of the arteries.

It is within the range of possibility that an increased activity on the part of the suprarenal glands may be a cause of greater or less intensity in the production of arteriosclerosis. Just to what extent this is operative as a cause can not be definitely stated, as it will require

* Read at a meeting of the Northwestern Ohio Medical Association at Tiffin, 1904.

1. THE JOURNAL, Sept. 17, 1904, p. 774.

a great deal of experimental, as well as clinical, research to determine it.

A multiplicity of other factors might be mentioned as leading to vascular decay, but as these are sufficient for the purpose of this paper I will not consume time in their discussion. Aside from the disease of the blood vessels, another factor is essential to the production of cerebral hemorrhage, and that is increased intracranial blood pressure. Branches of the middle meningeal artery are the ones most frequently ruptured; and particularly is this true of the lenticulostriate artery. Mendel has pointed out that the normal blood pressure is higher in this artery than it is in the cortical or other small arteries of the brain. If this be true, it will account in a rational way for the more frequent rupture of this artery.

There are so many causes that lead to increased blood pressure that it would be impossible to mention them all. Indeed, the patient is seldom seen until after the artery has been ruptured. If the physician is consulted before actual mischief has been done, he should point out the danger arising from sudden, severe, muscular effort, such as lifting, running to catch street cars, straining at stool, in short, anything that is liable to excite the heart's action. I wish to emphasize particularly the injurious influence arising from the pleasures of the table. Attacks of indigestion, which in this class of cases are so liable to follow a full meal, are a very great source of danger. The heavy meal should be at midday and the last meal should be taken at least three hours before going to bed. All articles of diet which produce flatulence should be avoided because of the danger of bringing on disturbed heart action. This distention of the stomach and bowels with resulting increased cardiac force, will explain many of those cases of sudden death which are encountered at times. The individual will go to bed at a seasonable hour after a hearty meal, apparently in the best of health and with perfect tranquillity and will be found dead in the morning. Tea and coffee should be entirely omitted from the dietary for the reason that they, too, disturb cardiac repose. For the same reason, anything containing alcohol should be tabooed. There can be no doubt that as man grows older less food should be eaten, particularly meats. This applies with greater force to those who have the responsibilities of business and professional work. We are a nation of high livers, and sooner or later we must pay the penalty.

As I have already said, we are seldom called until after the hemorrhage has taken place. These bleedings are not always profuse, but at times are slight in character and well-directed management will be of incalculable benefit to the patient. Nowhere in the whole domain of medicine is it more necessary to have well-defined ideas of what to do, and then do it. In these cases we must act quickly. Delays are dangerous. The individual should be subjected to as little handling as possible. This is a matter of vital importance. If at home, he should be made comfortable just where the attack comes on him. The head should be elevated and the clothing loosened. If the extremities are cold they should be surrounded with bottles of hot water. The dosing of the patient with ergot, iron, tannic acid and bromid is worse than useless. We have two factors to contend with—a broken blood vessel and a rapidly working, forceful heart pumping blood into it.

Manifestly, then, what is needed is quickly acting, powerful cardiac depressants, something that will limit the ability of the heart to pour blood into the bleeding vessel. I need hardly say that we can not stop the flow of blood into the ruptured artery, but we can lessen it. Moreover, there is increased peripheral tension, which must be relieved. The remedies to be used, named in the order of importance, are aconite, veratrum viride and gelsemium, and venesection. If the fluid extract of aconite is used it should be given in good-sized doses until its physiologic effects are apparent, say from five to ten minims every 30 minutes, when the dose is to be lessened or the interval lengthened. In the more pronounced forms of the trouble, when the patient can not swallow well, aconitin, in 1/50 or 1/100 of a grain, should be given hypodermically and repeated when necessary. When veratrum viride is used the initial dose of the fluid extract should not exceed five minims. This drug is a powerful cardiac depressant, but its action should be carefully watched in order to avoid producing nausea and vomiting. Gelsemium, by its direct action on the heart, is a most serviceable drug in these cases, and because of its lessened liability to produce nausea it is possibly to be preferred to veratrum. When the face is markedly cyanosed and when the individual is decidedly full-blooded, phlebotomy may be practiced with most gratifying results; but when the individual is of spare habit the loss of sufficient blood to be beneficial might put him at a disadvantage in his future struggle for recovery. Hypodermoclysis, by reason of its causing increased cardiac action, is not to be thought of. There is a growing belief that gelatin, by reason of its increasing the coagulability of the blood, is indicated in cases of concealed hemorrhage. It may be given by the mouth or injected under the skin. The amount hypodermically is usually about 250 c.c. of a 1 per cent. solution in a normal saline mixture.

To the larger portion of the profession, however, this procedure is lacking in practicability because gelatin might not be at hand from which to prepare the solution. Another objection is its slowness of action, and this I consider a serious one, for in cases of this character a prompt, energetic response is required. It goes without saying that stimulation with whiskey, brandy or strychnia is contraindicated.

Cathartics of any kind should not be used for the first few days because of the disturbance the act of defecation produces. When a cathartic is given, I think the mild chlorid of mercury the best.

The ice-cap to the head is recommended by competent physicians, and yet I regard it as of doubtful utility. I am at a loss to know how it can in any way influence the circulation in the deep structures of the brain, particularly such small arteries as those that are ruptured.

The patient should be kept absolutely quiet in bed for ten days or two weeks, and during this time should not be allowed to see any one except the physician and those in immediate attendance.

Clear-Cut Therapeutics.—One of the fatal mistakes made by the unthinking physician is to so medicate as to mask symptoms—a veritable burying of clean-cut therapeutic possibilities in medicines not indicated. This is a direct outgrowth of uncertain remedies, always the precursor of uncertain application. Given true remedies, there is courage for the physician to study certainty of application, out of both of which comes scientific practice.—*Alkaloidal Clinic.*

THE MANUFACTURE AND USE OF TIN SPLINTS.

WITH SOME SPECIAL APPLIANCES.*

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MINNEAPOLIS.

I have chosen this subject not because tin splints are not used but because the general practitioner does not realize how easily he can make them himself to fit each individual case, and because I have some special devices to offer which I have found of considerable value.

Sheet tin is a material peculiarly adapted to form some of the common splints we are called on to use. It is thin and light, when shaped into a splint it has considerable firmness, and it is a material which is easily manipulated. The equipment is simple—a small vise, tin shears, a hammer, a 5-cent punch and a few small rivets. I have made all the splints which are illustrated in this article out of about 30 cents' worth of tin. I have a metalworker's hammer; it is a convenience, but most of my work has been done with a common, cheap, carpenter's hammer. A small block of soft metal or a piece of hard wood is a convenience.

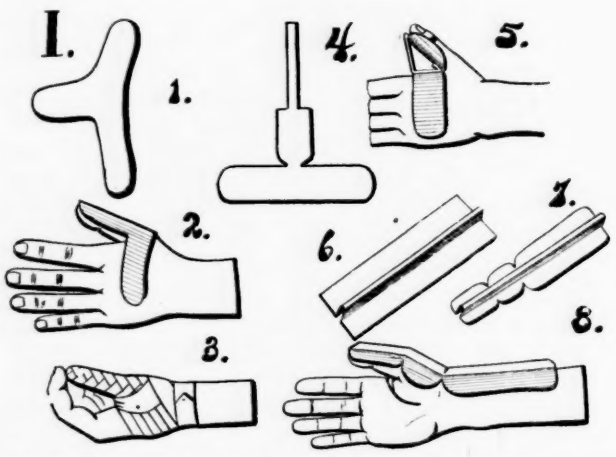

Chart 1.—Thumb splints. 1, 2 and 3, Dorsal splint; 1, Pattern; 2, outline for pattern; 3, splint applied. 4 and 5, Goldthwait splint; 4, Pattern; 5, splint; 6, 7 and 8, long dorsal splint; 6, Shows the ridge for strength; 7, outline cut; 8, bent and shaped.

In the manufacture of splints it is no small consideration that we can make a splint to fit the individual case. A pattern is easily made by laying a sheet of paper on the place to be fitted and then marking a rough outline of the splint to be made, e. g., on the dorsum of the thumb for the dorsal thumb splint (Chart 1, Fig. 2). The paper is now removed and the rough outline is again gone over with the pencil to smooth out its irregularities. This is cut out and serves as a pattern (Fig. 1). This pattern is laid on the tin sheet and outlined with a pencil or scratched with a metal point, such as a nail or scissors. The splint is then cut out and shaped to fit the part. In order to give it a finished appearance and to cover any ragged edge it may have, a narrow strip of surgeon's plaster is rounded over the edge about the splint.

This dorsal splint makes a firm splint for the thumb when properly fastened, and it lends itself gracefully to bandaging (Fig. 3). In Figures 4 and 5 we have the splint devised by Goldthwait of Boston. The pattern, Figure 4, may be made by marking the lower wings the width and length for the bearing on the hand, the middle portion the length and width desired for the thumb, and the upper portion about one-quarter of an inch wide and long enough to bend downward and then backward to or beyond the angle at the base of the thumb and thus to act as a brace for the thumb piece, Figure 5. A strip of surgeon's plaster placed downward over this strip and then turned under the hand-piece serves to hold it firmly in place. The middle portion is trimmed and shaped to fit the thumb and the splint is finished, as all the splints are, by a narrow strip of surgeon's plaster about the edges.

These two patterns form serviceable splints for the thumb and they are simple and easy to make. There are several other patterns which suggest themselves, but these will suffice and we will pass on to the long dorsal thumb splint (Figs. 6, 7 and 8). This splint gets its strength from the ridge, which is made by folding the strip of tin along its middle line, first by hand and then by pounding it with the hammer along the bend, using repeated blows of medium force until it is quite flat and straight. This fold is placed about a quarter of an inch deep between the jaws of the vise and the

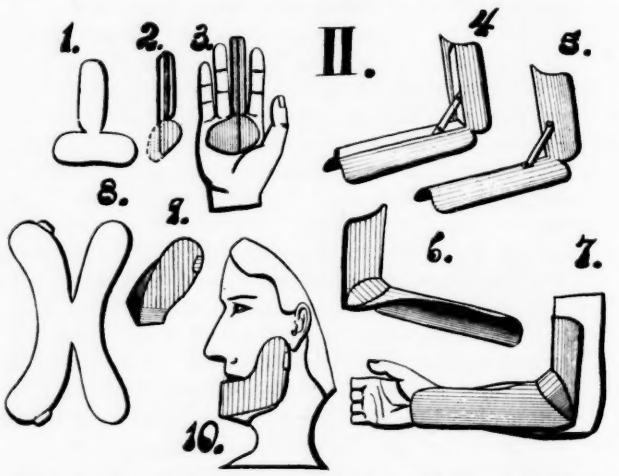

Chart 2.—1, 2 and 3, Finger splint: 1, Pattern; 2, splint; 3, splint applied. 4, 5, 6 and 7, Internal angular elbow splint; 4, With the ridge; 5, without the ridge; 6 and 7, with forearm piece swung to the inside for "thumb-up" position. 8, 9 and 10, Jaw splint: 8, Pattern; 9, splint bent—shows half of splint; 10, splint applied.

free edges are bent outward in successive portions from one end of the splint to the other. To make it flat and smooth along the center it is hammered while still in place but with the vise just loose enough to allow it to be drawn slowly through from one end to the other. It is evident that the strip of tin from which the splint is to be made should be cut half an inch wider than the splint is intended to be in order to allow for the double fold in the ridge, and it should be as long as the desired splint.

The splint is to be bent to conform to a natural position of the thumb and of the wrist. At the points corresponding to the base of the thumb and to the bend at the wrist, the tin should be cut straight in to within a quarter of an inch of the ridge, to allow the shaping of the splint after it is bent. The three segments of the splint should be trimmed to fit the parts they are to lie against. The ridge is now grasped in the vise and the splint bent backward at the wrist angle. The wrinkle made in the ridge is pounded smooth. This rivets it

* Read at the meeting of the Western Surgical and Gynecological Association in Milwaukee, 1904.

to itself and makes it firmly support the bend in the splint. The angle for the thumb is bent in the opposite direction. This time the ridge is stretched but it is very firm. The tin is now rounded to fit the parts and the ridge is beveled at the ends of the splint by cutting, or is smoothed over by being hammered flat.

This long dorsal thumb splint is of service in those cases in which, in addition to fixation of the thumb, we wish to fix the wrist also, as in some cases of dislocation of the thumb, some sprains of the thumb, tenosynovitis of the thumb tendons, some fractures of the metacarpal bone of the thumb and in suture of the thumb tendons.

Finger splints need little description (Chart 2, Figs. 1, 2 and 3). The patterns are simple; they are easily made; they have a narrow ridge to strengthen them, and this may be left standing or may be hammered over flat.

Fracture of the radius, of the ulna, or of both bones of the forearm above the middle, and some other conditions are best treated with fixation of the elbow at a right angle, in addition to other appliances. While plaster-of-paris fixation is suitable in some cases, many cases are more conveniently treated with the internal angular tin splint (Chart 2, Figs. 4, 5, 6 and 7). This

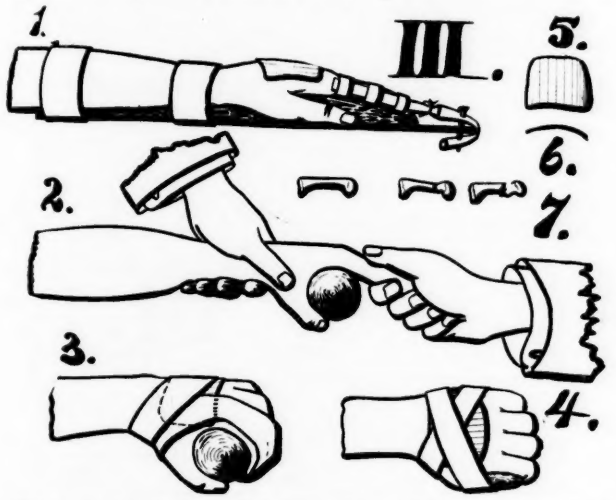

Chart 3.—Dorsal tin splint for metacarpal fractures. 7, Tendency of bone to cave downward.

is light in weight; it is easily removed and reapplied; it offers a certain amount of freedom of inspection even when not removed; and when once made it is always ready for use. The chart shows tin splints which can be easily made. Figure 4 shows one with the ridge bent in it. A small folded piece of tin riveted across the angle adds materially to its strength. Figure 5 shows one nearly as strong, bent from a single piece of tin without the ridge. These are both cut in at the elbow to allow bending at right angles.

A splint which is of greatest convenience is the one shown in Figures 6 and 7. This is cut so that the piece for the forearm swings over to the inside and makes it easy to place the arm in position with the thumb up, a position which is the most satisfactory one for most cases, as it is a position in which the ulna and radius are far apart, a thing of prime consideration in the treatment of fractures of these bones and it is the most natural and comfortable position for the arm to be in. The splint is constructed of three pieces, one for the upper arm, one for the lower arm and a small elliptical piece to strengthen it at the elbow. The upper piece should be cut out from its pattern first. It is bent to fit the curve of the arm and is then placed in position, with its lower edge against the paper which is being used to mark out the pattern for the forearm piece. This will allow an accurate outline at the elbow. The remainder of the pattern is outlined as in the figure. The splint may be fastened together in various ways. A simple method would be to fasten it at the elbow line with narrow strips of tin riveted into place, and to substitute for the elliptical brace one or two small folded strips of tin, as in the other splints described.

Fractures of the lower jaw, as a rule, are best treated in some other way than by the use of a splint, but if an external splint is used, a tin splint is light, strong and easily made (Chart 2, Figs. 8, 9 and 10). A pattern is easily cut out, as follows: Apply the upper

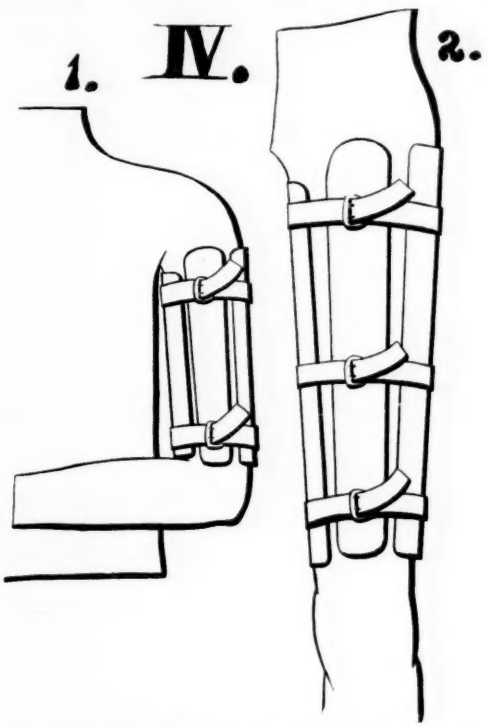

Chart 4.—Coaptation splints for thigh and forearm.

part of a sheet of paper over the mouth and jaw, back as far as the ears, and mark the outline corresponding to the lower jaw. Now hold the paper at the point of the chin and tip the lower portion up under the jaw, and fold the sides up to the ears and mark the outline of the jaw on each side, and the curve of the throat between. This gives a pattern such as shown in Figure 8. The wings are bent with the fingers and the lower portion bent up at the proper angle for the chin. If a small piece of tin is left on the upper wings, as shown in the pattern, these can be bent over and will act as hooks to catch the lower wings when bent up and will lock them into place instead of a rivet which might be used.

Fractures of the metacarpal bones are often unsatisfactory to treat. The usual tendency is for the bones to cave down (Chart 3, Fig. 7). Most of the devices for the treatment of these fractures aim at traction to overcome shortening, and then at some form of rounded pressure in the palm to force up the arch of the bone.

To these methods I have added a dorsal tin splint, curved to fit the back of the hand but straight in the line of the metacarpals (Figs. 1, 3, 4, 5 and 6). This

offers a firm surface against which to force the fractured metacarpal by the palmar padding.

Fracture of the shaft of the femur and of the shaft of the humerus are best treated, as a rule, by coaptation splints for their inner set of dressings. Plaster of paris is not satisfactory; it is rigid and can not be tightened to keep pace with the atrophy of the soft parts. By the use of buckles and straps of webbing, coaptation splints can be tightened, daily if necessary, without disturbing the fracture (Chart 4). Tin lends itself very readily to the formation of coaptation splints. It is easily rounded to fit the curve of the thigh or arm, and when so rounded it is in the form of an arch and is exceedingly strong. It is light and it is so thin that it offers the least possible interference with any outside apparatus which may be used. Large hospitals could have a number of these splints made, of various lengths, padded, covered with muslin, and stored away ready for use.

With fractures of the humerus high in the shaft, the control of the upper fragment is often unsatisfactory. A properly-fitting shoulder cap might help to do this, but I have never been able to find a prop-

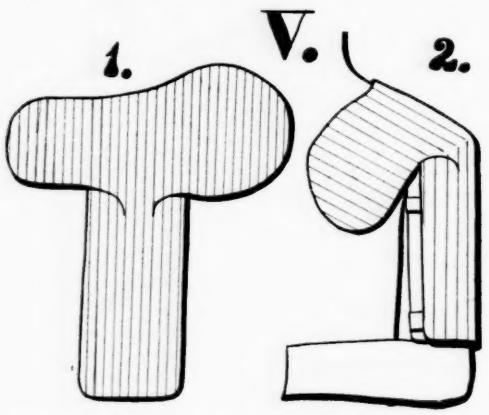

Chart 5.—Shoulder cap: 1, Pattern; 2, splint.

erly-fitting shoulder cap on the market. The most that they do is in effect to lengthen the outside coaptation splints. They do not get a grasp on the shoulder and fix the shoulder girdle. One can be made of tin, however, which will do this (Chart 5, Figs. 1 and 2). By laying a sheet of paper over the shoulder, we can mark out a pattern well down on the chest in front and in the back, and then, holding it at the point of the shoulder, we can tip the lower end against the arm and mark out a sufficient arm-piece well down toward the elbow. This serves as a pattern. The splint may be made from one piece of tin or from two. The tin is bent to fit the arm and shoulder, hammered a little at the shoulder to round it, and fastened with two or three small rivets on a side along the line of junction while held at the angle which best fits the shoulder. This splint, when properly fastened by adhesive plaster strips and bandage, gives firm support to the shoulder girdle and fixes the arm.

This brings me to the second portion of my paper, in which I hope to present briefly two original devices. The first one was worked out while trying to gain full flexion and extension at the elbow after a "T" fracture into the joint. It was successful beyond my expectations, and consists of two sets of appliances, one to gain flexion and the other to gain extension. The apparatus to gain extension (Chart 6, Fig. 1) consists of a tin brace extending from the upper to the lower arm, two tin shields to take the direct pressure of the ends of the brace off from the soft parts, a hammock of strong cloth doubled beneath the elbow and sewed in such a manner that a strap can be run through the end on one side, brought up over the brace and passed through the end on the other side and back above the brace again until it passes through the buckle. When the strap is drawn tight, the elbow is drawn directly up toward the brace, which is rounded in the form of an arch and is very strong. This allows the elbow to be strapped up toward the brace with all the force the patient can stand without too much pain, and it allows the restless patient to walk about, while the strap still does its work. When the arm yields a little, the strap can be

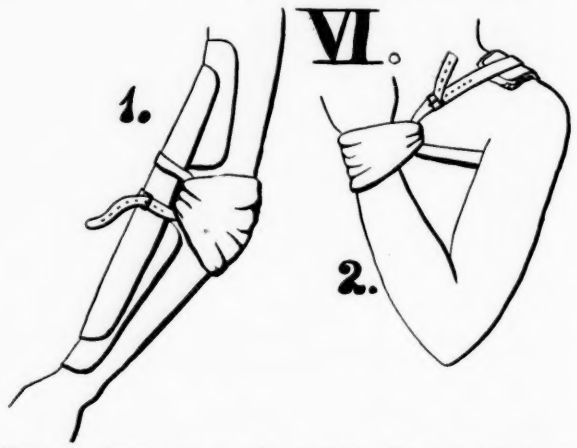

Chart 6.—Apparatus to gain extension (1) and flexion (2) at the elbow joint.

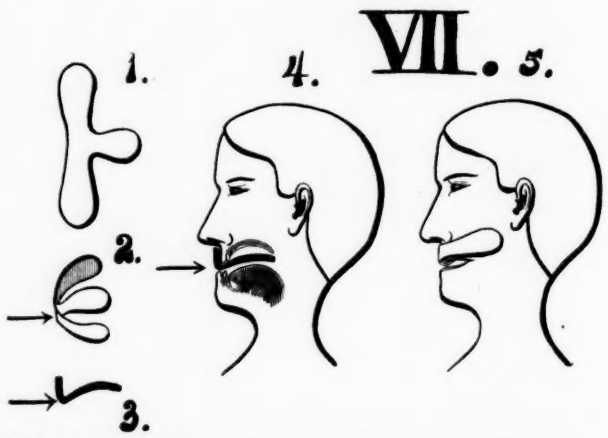

Chart 7.—Device for protection of the line of suture in cleft palate operations: 1, Pattern; 2, splint; 3, section; 4 and 5, splint applied.

tightened again. When the arm is nearly straight, it is best to prop the brace up a little distance above the arm by putting a pad under each end. This gives more room between the brace and the bend of the elbow, and allows the arm to come up more easily.

The device to gain flexion is even more simple (Fig. 2). A small tin shield, well padded, takes the direct pressure of a strap which passes over the shoulder and beneath the axilla and then about the wrist, or through a broad band of strong cloth at the wrist and then through the buckle. The shield may be placed behind the upper arm and the strap run around the arm instead of around the shoulder, if desired, when some degree of flexion is gained. The advantage of this device, as well as of that for gaining extension, lies in

the fact that as strong a pull as the patient can well stand can be applied, and it can be exerted as long a time as desired.

I have found that it is of greater comfort to the patient to use forced flexion one day and forced extension the next rather than to attempt both on the same day. This method of applying force, of course, can be used on elbows in which motion is limited from other causes, as after dislocations.

The last device is represented in Chart 7, Nos. 1, 2, 3, 4 and 5. It is made for the purpose of protecting the line of suture after operations for the closure of a cleft palate. The pattern is easily made. The center strip, which is to protect the suture line, is readily cut out, not quite so wide as the arch of the teeth, and not quite so long as from the lip to the back of the soft palate. The upper portion of the paper is turned up against the lip and cheeks, and the wings used as a support, for the splint may be marked out. The middle piece is bent to a flat arch, much flatter than the vault of the palate, and it gets its bearing either along the palate near the line of the teeth, or on gauze packing placed in the incision usually made near this line.

In actual use it best can be kept clean by wrapping the entire splint in rubber tissue.

THE DIAGNOSIS AND TREATMENT OF ABDOMINAL PAIN.*

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Satisfactorily to elucidate within the limits of an address the subject of the diagnosis and treatment of abdominal pain is a task like that of cleaning the stables of Augeas and would require a second Hercules for its performance. Pain is probably the most constant of all symptoms, no matter what the disease nor where the pathologic lesions are situated, and the abdomen is surgically the most extensive and the most important part of the human body. From the sudden stab of momentary indigestion to the chronic agony of cancerous ulceration, from the burning ache of gastric or intestinal perforations to the prostrating pain of ruptured extrauterine pregnancy, through the whole fell gamut of abdominal disease the surgeon's mind must run, as he seeks here and there a note of hope from the discord of pain, in the effort to snatch his suffering patient from the grave. If at times the opportune moment is lost, if the correct diagnosis is missed, what inexpressible sadness must fill the surgeon's heart, as he is compelled to stand idly by, watching the lone sufferer sink beneath the pestilential blast of peritoneal inflammation. How keen must be his self-reproaches when he realizes, as he mostly does, that timely operation would have saved the life which is now ebbing away before his eyes, and would have restored to the happy family circle a loved husband or wife, an only son or an idolized daughter. Vain, then, are his regrets; vain are his efforts to slow the fevered pulse, to check the constant vomiting, to quiet the anxiety of mind and the unequaled distress of body, attendant on fatal peritonitis. The violence of the symptoms at times, indeed, may be soothed in the happy slumbers of an opium trance; but it is a trance which lasts until the wan sufferer has reached that land from whose bourne no traveler returns.

To a surgeon who has seen in his own practice or in that of others such deaths as these, and who has had brought home to him, perhaps, by the death of one dearly loved the sense of loss which is doubly calamitous under such circumstances, no efforts of human ingenuity, no laborious procedures of human skill, no pains to acquire that experience without which diagnosis is but a haphazard guess and prognosis a leap in the dark, no means, I repeat, human or divine, appear too insignificant to be availed of in the study of the diagnosis and treatment of abdominal pain.

I trust, therefore, that you will bear with me if I seem to lay too much stress on the advisability, on the indispensability, on the absolute necessity of attentively studying every case in all its details, trivial as some of them may seem, before arriving at definite conclusions. Superficiality is a trait which the abdominal surgeon of all others must shun at the present day. There are many individuals who are satisfied if, from a hasty examination they can come to one of two conclusions—either that the patient must be operated on or that he must not be operated on, leaving until after the abdomen is opened the determination as to what the operation shall be. Such operators say, "If we do not know what is inside where is the harm in cutting a hole to look through?" The most appalling disasters in surgical history are the results of this teaching. No surgeon should feel satisfied with his own ability until he is able to say, with a reasonable degree of certainty, whether, after the abdomen has been opened, anything further can be done to relieve the patient's condition.

Nor would I have it understood that an exploratory laparotomy is never justifiable. In many abdominal conditions, such as cancer of the stomach, we explore to ascertain the extent of the disease, with the hope of removing it, if possible, and with the expectation of at least being able to render the patient's remaining days less painful and distressing. In some patients, when first seen, peritonitis is so extensive, and the history so obscure or deficient, that we explore to seek the source of infection, with the hope of removing it, if possible, and with the certainty of being able to give a means of exit to the products of inflammation, whose systemic absorption is producing the toxemia or possibly the hopeless septicemia of the disease.

Delay in the diagnosis of abdominal pain should be studiously avoided. Every diagnosis made at the postmortem table or at an antemortem operation is sometimes, indeed, merely sad evidence that the art is long and time short—that the art of surgery is not yet a perfect science—but it is more often a demonstration of the culpable negligence of the surgeon or physician in his manner of eliciting the patient's history, of noting his symptoms, and of making the physical examination.

Abdominal pain is nature's signal of intra-abdominal mischief, and it is criminal to shroud it over with a foggy mist of opiates. Opium is probably the most valuable single drug in the pharmacopeia, but it is the remedy of all others which is most outrageously abused. A physician who makes a practice of administering a hypodermic injection of morphin to the patient who complains of abdominal pain, before he makes a conscientious and systematic physical examination of the abdomen, and before he arrives at a diagnosis which shall be at least tentatively correct, is, in my opinion, a physician not worthy of the name.

* Read before the Hartford (Conn.) City Medical Society, 1905.

CHARACTER OF THE PAIN.

Abdominal pain may be acute or chronic; it may be due to intra-abdominal disease or to thoracic disease; it may be due to colic or to inflammation, to disease or to trauma; and it may be classified in various other ways: It may be pricking, stabbing or lancinating, cutting, tearing, burning or aching. It may be spontaneous to all appearances or due to some well-known cause. To discuss in detail the many lesions, abdominal, thoracic, spinal or other, which may give rise to abdominal pain of whatever variety, would lead me too far afield; and they may be found, moreover, in many text-books of surgery and may be studied there to better advantage. But what we do not find in surgical text-books, and what I venture to think is of great importance to the general physician as well as to the abdominal surgeon, is a clinical study of pain in the abdomen; and to this point I now beg leave to call your attention.

PATIENT'S HISTORY.

We may learn, first, from the history of the patient whether similar pain was ever experienced before; how long the intervals of freedom from pain have been; the duration of each attack; and the character of the pain. If the pain is recurrent, it is more likely to be due to the repeated action of the same cause than to be produced entirely *de novo;* that is to say, it is more probably due to gastric or to duodenal ulceration, to recurrent attacks of appendicitis, to biliary or renal calculi, or even to locomotor ataxia, than to such causes as ruptured extrauterine pregnancy, strangulated hernia, pleuritis or pneumonia, from recurrent attacks of which diseases a patient is rarely liable to suffer. If the pain recurs with considerable regularity after the ingestion of food we are naturally lead to examine the patient for gastritis, ulceration of the upper intestinal tract, or peritoneal adhesions following some previous illness. If the pain recurs periodically with menstruation we instinctively look to the generative organs for its cause. If it occurs with persistence, but irregularity after the ingestion of food, gallstones, pancreatic disease and appendicitis must be recalled. If it invariably follows, precedes or accompanies defecation, then hemorrhoids, fissure of the anus and cancer of the rectum are brought to mind. If the pain is acute and occurs for the first time, we must look to the history of its onset with even more attention. Pain following sudden exertions may be due to strangulation of a hernia, either external or internal, to ruptured extrauterine pregnancy, to the loosening of old adhesions, to the formation of a volvulus, to the rupture of an overdistended bladder, or to an ovarian cyst twisted on its pedicle, or to an abortion. If the pain follows injury, either a fall, a blow or a crush, the previous history is of considerable moment. If the accident followed a heavy meal, the stomach may be ruptured; if the patient was intoxicated, the bladder is often ruptured; while the location of the injury, with other well-known symptoms, may suggest injury of the intestinal tract, the liver, the spleen or of one of the kidneys. In a pregnant woman, an impending miscarriage or an actual rupture of the uterus is to be feared. The history of the case is not so helpful in cases of chronic pain as is the physical examination, unless there have been acute attacks.

AGE AND SEX.

Age and sex are of great value in the diagnosis of abdominal pain. In the female sex, the great preponderance of lesions of the pelvic organs over those of the intestinal tract should be recollected; but sudden pain, sometimes causeless, in anemic young women, especially those of a sedentary occupation, is frequently almost pathognomonic of perforated gastric ulcer. In children, the overwhelming importance of gastroenteritis, enterocolitis, or simple enteralgia must be kept prominently in view; but these should not make us forget the possibility of appendicitis, intussusception, Pott's disease, and pneumonia as frequent causes of abdominal pain in children. In the aged, malignant diseases of the stomach, the cecum and the rectum are usual causes of abdominal pain; while in adults, besides the diseases already mentioned, we have gall-bladder or pancreatic diseases and perforation of gastrointestinal ulcers.

OCCUPATION.

The occupation of the patient is not usually of much aid in the diagnosis of abdominal pain; but painter's colic would at once be suggested if the patient were a worker in lead in any of its forms, while young and anemic seamstresses are notoriously prone to gastric ulcer, and barbers and others who stand much are apt to develop piles. Brewers are considered especially liable to hepatic congestions and cirrhosis.

LOCATION OF PAIN.

The location of the pain is of great importance. In the first place, it may be either superficial or deep. The superficial sensitiveness of abdominal pain, which has been studied by Sheeren[1] and others in its relation to appendicitis, is due, as demonstrated by these writers, to an overflow of sensation from that part of the spinal cord with which the sensory nerves of the diseased area are in connection. In the case of appendicitis, the sensory nerves primarily affected are those connected with the eleventh dorsal segment of the spinal cord, and accordingly the overflow of sensation may occur into any of the other nerves connected with this segment, usually into the eleventh and twelfth dorsal and the first lumbar nerves. The irritation of the filaments of these nerves thus produced causes the superficial sensitiveness of the abdomen already referred to. This sensitiveness is best detected by gentle pinching, stroking or pricking motions, starting in unaffected areas and gradually outlining the region of cutaneous hyperalgesia. It is not out of place in this connection, perhaps, to devote a few words to the method of production of abdominal rigidity, which will occur whenever the reflected irritation affects a motor rather than a sensory nerve; the rigidity, therefore, is local or diffused, according to the extent of the intra-abdominal irritation, and is strictly analogous to the muscular contraction by which an inflamed joint is held rigidly at rest, a phenomenon which was long since explained by Hilton.

The sixth and seventh dorsal nerves supply the epigastric region, popularly spoken of as the "pit of the stomach," and pain in that region is not infrequently due to the existence of Pott's disease of the spine, the carious process compressing that portion of the spinal cord from which these nerves are derived. The eighth dorsal nerve is attributed to the region between the epigastrium and the navel, while the tenth supplies the skin in the umbilical region, and branches of the eleventh and twelfth dorsal nerve pierce the rectus muscle over the appendix. A twig of one of these lower nerves is found at McBurney's point, and thus explains

1. Sheeren, Lancet, Sept. 19, 1903.

the very great frequency of pain and cutaneous hyperalgesia in this situation when the appendix is diseased. The iliohypogastric, or first lumbar nerve, is distributed to the skin over the pubes and external abdominal ring, but also sends a twig to the tunica vaginalis testis, thus explaining the tenderness of the right testicles that may be found in appendicitis. Certain of these nerves, as previously implied, may be affected in various diseases of the spinal cord, producing at one time the well-known sense of constriction and at another the gastric or intestinal crises of locomotor ataxia. The erythematous group of skin diseases, moreover, is sometimes attended by abdominal crises more or less severe.

REFERRED PAIN.

The pain may be referred in some diseases into widely distant parts of the body; mere reference will suffice to the pain in the right shoulder blade sometimes encountered in hepatic affections, and to the tender spot to the right of the lower dorsal vertebræ often occurring in cases of duodenal ulcer; the pain in the thighs attendant on uterine and rectal disease is not to be overlooked, and I am cognizant of a case in which pain from pressure of an appendiceal abscess closely simulated sciatica.

With regard to the region of the abdomen in which the deep pain is felt, it may be said, as a rule, that the surgeon's knowledge of anatomy, which is the solid foundation of true surgical knowledge, will be a safe guide to him; but he should not take it for granted that the pain to the left of the linea alba can not be significant of appendicitis, nor that epigastric pain is never the chief subjective symptom of rupture of the urinary bladder. It has been my experience that an inflamed appendix situated in the pelvis frequently is productive of left-sided abdominal pain; and, although this may often be satisfactorily attributed to reflected pain involving the nerves of the left rather than the right side of the abdominal wall, as already described, yet the pain is sometimes deeply seated and exists in the appendix itself. Pain commencing in the kidney is exceedingly apt to run down the ureter or into the corresponding testicle; pain due to disease of the bladder may be felt only at the end of the penis; pain due to constipation and retained flatus may circle the whole abdomen in the course of the colon and be brought to an abrupt stop by the ileocecal valve in the neighborhood of a healthy vermiform appendix. A sagging loop of intestine, or the omentum, by pressure on the internal abdominal ring, may closely resemble chronic appendicitis; and I have seen such symptoms relieved on more than one occasion by the adjustment of a light truss. A proptosed stomach may hang well below the umbilicus, and may thus produce pain in the suprapubic region, and a similar condition of the sigmoid may be productive of rectal pain thought to be malignant in origin. A floating kidney or a wandering spleen may reach nearly every part of the abdomen and may simulate or be simulated by an ovarian cyst with twisted pedicle.

LOCALIZATION OF PAIN.

Another matter of importance in connection with abdominal pain is whether the pain is first diffuse and later becomes localized, or whether it is first circumscribed in character, but subsequently becomes general. In appendicitis, for instance, the pain, as is well known, is usually at first somewhat widely diffused in the umbilical or epigastric regions, and only when the peritoneal inflammation commences is it distinctly localized to the right iliac fossa, and subsequently it may spread again over the whole abdomen as the peritonitis increases. In ptomain poisoning, on the other hand, the pain, early in the attack, is fairly well localized to the epigastric region, but in time involves the whole abdomen, yet without signs of peritonitis, thus pursuing a directly opposite course to appendicitis, in which the pain is first general and later is localized. In intestinal perforation, moreover, the immediate pain is local and fixed, but spreads with the peritonitis all over the abdomen, whereas in appendicitis the diffuse pain precedes the local. So, too, with relation of abdominal pain to vomiting. If sharp pain precedes the act of vomiting it will almost invariably be found that peritoneal involvement is present; whereas, if vomiting is the first symptom the diagnosis of any peritoneal lesion, especially appendicitis, must be accepted with great reservation.

DIFFERENTIAL DIAGNOSIS.

There are a few affections which it is so essential to diagnose correctly, and in which an error is productive of such grave results, that particular pains should be taken to avoid mistakes. Among these the abdominal pain due to thoracic disease, which has been already referred to, is of great importance. In the case of pneumonia or pleurisy, when there is pain referred to the upper abdomen, the presence of a cough, rapid breathing out of proportion to the pulse, associated with high temperature; breathing in which the nose takes an active part, together with the presence of cyanosis, should satisfy us as to the thoracic nature of the disease. Examination of the chest should show the presence of physical signs.

Perforated typhoid or gastrointestinal ulcer is capable of simulating chest disease from dyspnea, cyanosis and the condition of the abdominal walls produced. Peritoneal friction consequent on perforated gastric ulcer has been mistaken for pleuritic friction.

Uremia, as is well known, may be accompanied by almost incessant vomiting; and Musser[2] has called special attention to abdominal pain due to uremia. He has seen it precede the uremic convulsions of puerperal nephritis.

The presence of severe abdominal pain when associated with vomiting always calls for careful examination for the presence of a hernia, as the rupture may be so small as never to have attracted the notice of the patient. On the other hand, the pain caused by appendicitis has been thought to be due to strangulation of a hernia which when operated on was found to be uninflamed, though irreducible.

In intestinal colic after eating indigestible food the pain is usually accompanied by vomiting. In colic due to poisoning with lead or brass the pain may be very severe and the paroxysms may continue for many days, accompanied by rigidity and tenderness of the abdominal walls. Pal[3] has expressed the opinion that the pain of lead colic is due to irritation and constriction of the blood vessels in the intestinal walls, which indirectly irritate the sympathetic nerve filaments. He has shown that this vascular tension is increased, during the persistence of the pain, from one-half to twice the normal pressure.

It must not be lost sight of that in the passage of gallstones the pain may be referred to the right groin,

2. Musser: American Medicine, 1904, vol. i, p. 503.
3. Pal: Wien med. Presse, 1903, No. 2, p. 57.

and hence may be mistaken for that caused by appendicitis; but the history of the sudden onset, and possibly the previous passage of calculi, the intensity of the pain, perhaps the presence of shock and the marked board-like rigidity of the abdominal wall, the pulse not being accelerated and the absence of temperature, should be very suggestive of the former.

I have seen renal colic mistaken for intestinal obstruction, chiefly, I believe, on account of the presence of bowel distension and inability to move the bowels owing to large and frequent doses of morphin having been administered. I recall one case in which the diagnosis of intestinal obstruction had been made; to this diagnosis I took exception, diagnosing the condition as renal colic; eventually the ureter was found blocked by a stone. In this case the bowel symptoms were the result of frequent and large doses of morphia.

Pain referable to the loin and shifting in the direction of the groin, with tenderness of the kidney, the presence of blood in the urine, and particularly if the patient has suffered like attacks in the past, would be of great value in excluding serious intraperitoneal lesions.

In perforated duodenal ulcer the inflammatory exudate of the extravasation of the contents of the bowel may extend so far downward as to simulate an appendiceal abscess; and when the patient is first seen after this extension of the process has occurred it may be impossible to differentiate between the two conditions until after the abdomen has been opened. If an accurate history of the attack is obtainable, however, or if the case is seen at the time the perforation occurs, the different location of the symptoms and the more marked shock, together with a history of more or less chronic pain in the duodenal region, should enable a differential diagnosis to be made.

The pain of a perforated gastric ulcer is not always sudden in its onset and, therefore, peritonitis may be present before the condition is recognized; but in cases of abdominal pain, when there is reasonable doubt, the abdomen should be opened before peritonitis occurs, as it is better to err on this side than to defer operation until too late to accomplish any good. The absence of liver dullness in perforation of the gastrointestinal canal, particularly in perforated typhoid ulcer, is not always significant, as this condition may be brought about by great distension of the colon. The passage of fluid from the stomach into the lower abdomen in some cases may explain this position of pain.

The twisting of the pedicle of a freely movable kidney and obstruction of the renal veins which leads to congestion of the organ is a cause of abdominal pain which must be borne in mind; also traction on the duodenum by a movable kidney, causing severe attacks of abdominal pain and vomiting.

A cause of abdominal pain, which, it is true, is rare, yet which must not be lost sight of, is embolism of the mesenteric vessels. This produces pain, vomiting and constipation so closely simulating intestinal obstruction and peritonitis as to render it impossible to determine the exact condition. Acute hemorrhagic pancreatitis so closely simulates acute intestinal obstruction that a differential diagnosis is not always possible.

The abdominal symptoms, the result of irritation of the sympathetic ganglia or nerve roots in the lower abdomen, may simulate acute disease of the abdominal viscera. The visceral crises of locomotor ataxia and of the erythematous group of skin diseases, reference to which has already been made, are probably to be explained on this hypothesis. Buch[4] has called attention to abdominal pain due to the presence of arteriosclerosis. The manifestations of this condition in other regions of the body are now fairly well known, and those due to arteriosclerosis of the vessels of the splanchnic area thus described by Buch, who divides these patients into two main classes. In the first class the abdominal symptoms dominate the picture. The patients, usually over 40 years of age, are unexpectedly seized with severe attacks of epigastric pain, resembling more or less closely the typical attacks of angina pectoris. These attacks may last from a few minutes to an hour and may recur many times a day, being often precipitated by the factors usually provocative of the attacks of angina pectoris. In the second class he places those patients in whom anginoid attacks or true angina pectoris are present. In patients subject to this abdominal pain of arteriosclerotic origin there are present almost always distinct evidence of arterial degeneration in other parts of the body; and as the abdominal pain is practically independent of digestive disturbances and is only exceptionally attended by meteorism, the diagnosis, he thinks, should not be impossible if the condition is borne in mind. Tenderness of the abdominal aorta may often be elicited, but the aorta is seldom enlarged or misplaced.

The pain consequent on ruptured extrauterine pregnancy is always accompanied by a pallor, which is usually extreme; and there may possibly be shifting of the dullness in the flanks. It is usual, moreover, in these cases to obtain a more or less typical history.

It is thus clearly seen that the determination of the cause of pain in the abdomen is not always an easy matter, and that the surgeon who is widest in his experience and most painstaking and accurate in his examination and interpretation of the phenomena present will be least likely to err in his diagnosis, or, in case an error is made, will be less to blame than one who merely jumps at a conclusion without due reflection or who confessedly makes habitual resort to an operation as a means of discovering his patient's ailment. To call a patient a "neuro" who complains of pain, the cause of which can not be easily discovered, is too often only a cloak for ignorance.

TREATMENT.

In considering the treatment of abdominal pain we must first and foremost keep before our minds the true cause of the pain. It is idle to dose the patient with castor oil or with paregoric or to order a mustard plaster or an ice bag until we have discovered that which we desire to treat; and when this, which is not always easy, has been accomplished we may then prescribe the appropriate remedy. The whole matter of the therapeutics of any disease may be tersely summed up in the phrase, "Remove the cause," and the enthusiastic surgeon should not forget that there are other means than the scalpel, in very many cases, by which the cause may be "safely, swiftly and pleasantly" removed.

Although it is a subject which has already been alluded to, I feel it can do no harm to devote a short time to the discussion of the administration of opium in cases of abdominal pain. My unabated opposition to this drug as a remedy in appendicitis and in other inflammatory conditions of the peritoneum is so well known that any further elucidation of my views may

4. Buch: St. Petersburger Med. Woch., 1904, xxix, No. 27, p. 298. Abstracted in Amer. Jour. Med. Sciences, 1905, No. 1, p. 532.

seem superfluous. I am willing to acknowledge that opium relieves the pain. That is one of its chief therapeutic actions, and is a result that can not be denied; but in diseases for which it is employed, as in appendicitis, for example, there are other means equally pleasant and quick, as well as much safer, by which the primary pain—known as appendiceal colic—may be relieved. If the patient is seen early, very soon after the onset of the first symptom of appendicitis, that is, while still in the stage of appendiceal colic, and if there is the history of the ingestion of indigestible food, then the administration of a brisk cathartic, not a drastic purge, with rest in bed, and the local application of an ice bag to the abdomen, in a few cases of appendicitis will result in abeyance or even complete disappearance of the pain. Such a course of treatment has the additional recommendation that it does not paralyze the sensory nerves of the patient, with the result that if the secondary pain of appendicitis—the pain due to peritoneal involvement—should occur the gravity of the lesion will be readily recognized, and operative treatment, if not already undertaken, can then be instituted; this will not be the case if the sensibilities of the patient are so obtunded by opiates that gangrene or perforation of the appendix passes unnoticed.

It is also claimed by the advocates of the opium treatment—few though they be—that the use of this drug arrests the cell changes, and so arrests the progress of inflammation. This is a theory which is not readily proved or disproved by experiment; but even if it were true for such an organ as the appendix, which I doubt, it would not remove the cause of the inflammation, the deadly bacteria; it would at most only preserve the appendix in its primitive state of inflammation; and as soon as the specific action of the opium ceased the bacteria would continue their work and systemic absorption of their toxins would recommence.

I am not, on the other hand, one who can claim never under any circumstances to have employed morphin in cases of appendicitis. I feel that when the diagnosis has been surely made, and when preparations for the aseptic removal of the offending organ are already under way, then it is inhuman to deny these patients, if they still suffer pain (which is only exceptionally so severe as to require it), the solace derived from a hypodermic injection of morphin.

In certain far-advanced cases of malignant disease of the abdomen I hail opium as the most valuable drug, and consider its prolonged use for purposes of euthanasia perfectly justifiable.

While we must recognize that removal of the cause of the abdominal pain is the ideal treatment, I think it should be emphasized, as I have already remarked, that there are other methods open to us than cutting the pain out with a knife or dulling our patient's sensibilities with opiates. In the colic of children nothing will remove the cause, whether it be green apples or plum pudding, so surely as an emetic, if the case is seen early, or a purge, if it is seen late. In the case of pain due to foreign bodies which have been swallowed, no surgeon should be so guilty of malpractice as to administer a purge. The Vienna treatment of mashed potatoes and other soft foods, so ardently advocated by Billroth, is the only rational plan to adopt; and emetics and purges should be studiously avoided. In these, as in certain cases of colic, the use of opium may relax the contracted intestines and permit of copious fecal evacuations.

The abdominal pain of spinal caries, as we all know, is best treated by placing the patient in bed in the supine position and employing continuous extension of the spine. This is a very efficacious method of removing the cause of the pain—pressure—when its removal by operation is inadvisable; the rationale is the same as extension in early hip-joint disease. Pain from other forms of pressure may be likewise successfully relieved by position. Who does not know of the relief to pelvic and rectal congestions obtained by a rest in bed; of the freedom from nausea and vomiting in cases of gastritis or varicose veins in the stomach or esophagus, which may be obtained by the simple expedient of lessening the congestion by the position of the patient? Rest on the affected side in cases of diaphragmatic pleurisy, of pneumonia with abdominal pain, even in cases of appendicitis, will in great measure relieve the pain. After an abdominal operation pain in the small of the back is so readily relieved by arching the lumbar spine over a pillow, or by supporting it with the nurse's hand, that so simple a remedy is often overlooked, and the nurse will ask for her patient to be drugged out of the pain, instead of removing it by change of position.

Support to the abdominal walls is often a factor of great moment in relieving abdominal pain. A good firm belt, though in my opinion of no value in preventing the formation of a hernia, will often entirely relieve its symptoms. In patients with many old peritoneal adhesions, the most intense intestinal discomfort is at times produced by discarding their abdominal support. A child with a comparatively insignificant umbilical hernia may be transferred from a miserable dyspeptic to the picture of health by the application of a suitable support.

The regulation of a patient's diet as a means of diminishing intestinal pain of various kinds can not be too prominently kept in mind; but even after this has been attended to, and after all other palliative methods have been tried, there still remain cases where the only cure is by operation. An operation, moreover, even in chronic cases, should not be left too long untried and should not be regarded as the last resort not only from the standpoint of treatment, but also from the standpoint of diagnosis. I think little of "last resort" operations and rarely perform them. The responsibility for these cases should remain where it belongs. The reason why a surgeon is called on oftener to operate than to assist in making the diagnosis is his own fault and the result of the fallacious teaching of exploratory incision. The natural forerunner of an operation should be the diagnosis, and until the diagnosis is made, with but few exceptions, an operation should not be done. It should be the aim of a good surgeon to be a diagnostician as well as an operator, and, being such, his judgment is of as much moment in deciding the question of operation as well as the nature of the operation. There are very few instances in which a prompt operation in the case of acute peritonitis would not cure the disease; and in almost as many instances an operation at a still earlier stage of the disease would have effectully prevented the onset of peritonitis. Especially true is this of the various forms of intestinal perforation, and I am firmly convinced that where gastric or duodenal perforation, or perforation by a typhoid ulcer, is unsuspected, immediate laparotomy offers the patient a far better chance of recovery even if the diagnosis is not absolutely certain than does hesitation and procrastination in seeking the surgeon's knife. The abdomen

should always be explored if there is reason to believe in the existence of hemorrhage; not only may the immediate danger to life from the loss of blood be great, but if the patient survives the hemorrhage the probability of fatal peritonitis is great. As Richardson[5] well says, the use of intravenous infusion of saline solution may render such an operation possible even if the patient when first seen is in collapse and almost pulseless. In such cases as these—either intestinal perforation or intestinal hemorrhage—death without operation is so certain and so immediate, while a fatal termination in a laparotomy negative in its findings—the *laparotomie blanche* of the French—is so nearly unheard of, that the proper course to pursue, it seems to me, is no longer a subject for discussion.

Of the various classes of operation demanded for the relief of abdominal pain I have not left myself time to speak. Those for removing the cause of the disease, such as appendicectomy, cholelithotomy, prostatectomy, suprapubic lithotomy, oöphorectomy, hysterectomy, etc.; those for repairing lesions in the continuity of the intestinal tract, such as typhoid perforations, or perforations of gastric or duodenal ulcers, etc.; those for short-circuiting the ingested food on account of intestinal stenoses—all these operations, with the indications and results of each, might well be discussed in connection with the subject of abdominal pain. But if I have succeeded in drawing your attention to the salient points in the diagnosis and to the main principles of treatment of abdominal pain, I will feel that my remarks have not been entirely devoid of interest.

REPORT OF THE MEDICAL DEPARTMENT OF THE UNIVERSAL EXPOSITION, ST. LOUIS, 1904.

LEONIDAS H. LAIDLEY, M.D.

Medical Director.

ST. LOUIS.

ROSTER OF MEMBERS OF MEDICAL STAFF.

MEDICAL DIRECTOR: Dr. Leonidas H. Laidley, Jan. 15, 1902, to Jan. 1, 1905.

ATTENDING SURGEONS: Dr. Josiah G. Moore, surgeon in charge, Emergency Hospital, July 1, 1902, to Dec. 12, 1904; Dr. M. E. Sheets, April 15, 1903, continued in service; Dr. Otto A. Wall, March 31, 1904, to Dec. 1, 1904; Dr. Clyn Smith, April 29, 1904, to Dec. 1, 1904; Dr. W. S. Lawrence, Jan. 4, 1904, to Feb. 3, 1904.

VISITING PHYSICIAN: Dr. Luther P. Walbridge, Nov. 15, 1902, to Dec. 15, 1904.

BACTERIOLOGIST: Dr. Carl Fisch, July 20, 1904, to Dec. 1, 1904.

SANITARY OFFICER: Dr. James M. Gassaway, lieutenant-colonel, Marine Hospital Service, June 14, 1904, to Dec. 1, 1904.

AMBULANCE SURGEONS: Dr. George E. Adams, Aug. 12, 1904, to Sept. 30, 1904; Dr. Ned O. Lewis, March 27, 1904, to Aug. 12, 1904; Dr. Henry M. DeMenil, April 30, 1904, to Nov. 15, 1904.

SANITARY EXPERT: Dr. George W. Dumphy.

SANITARY INSPECTOR: M. T. Sweeney, Feb. 1, 1903, to Feb. 28, 1903.

ORGANIZATION.

The Chief of the Medical Department received his appointment January 13, 1902, with instructions to report to the Committee on Sanitation. At a meeting held to formulate plans for the organization of this department, the following general arrangement was made and approved: The title of the Chief Medical Officer should be "Medical Director," the appointment having already been accepted. The Medical Director shall have authority to appoint, subject to the approval of the Committee on Sanitation, such assistants as he may deem necessary for efficiency in organization and for the prosecution of the work. The duties of the Medical Director were thus formulated: To organize a Medical Department having jurisdiction over all cases of personal injury in the line of duty; to assume the care of the resident population and visitors, and of such other cases as the Exposition Company might be responsible for, or which in their judgment should be cared for; to exercise a supervision over all sanitary and hygienic matters connected with the grounds and buildings and over all matters pertaining to the health and physical well-being of the employes engaged in the conduct of the Exposition. A temporary hospital was opened in the Athletic Club House, which had been fitted up for the care of patients, two wings, offices, and examination and operating rooms were constructed, thus making reasonable provision for the care of the sick and injured. The Medical Director, after the preliminary work in organization had been effected, was instructed to report to the president all matters pertaining to this department. At the end of the month, a full report was rendered both to the president and to the chairman of the Sanitary Committee. Blank vouchers, payrolls and other stationery were furnished for future use. All orders for supplies were sent to the president, and were forwarded by him to the committee on supplies to be furnished.

In the selection of my staff, I gave preference to those who had hospital experience for one or more years, and likewise selected those who did clerical work from those who had army experience, and found them well trained and willing help.

The large resident population, many of whom lived in tents, with a large force of workmen, called for resident surgeons, who spent their time in the hospital, and one visiting physician, who cared for the sick in the camps and temporary buildings.

No one was employed in any department who would not give all his time and attention to the care of the sick and injured. The hospital service was placed under the care of the senior surgeon, to whom all should answer in the absence of the Medical Director.

A full report was kept of each case brought to the hospital, both as to its medical character and the circumstances attending the injury which might have any bearing on liability as it affected the corporation. Early in the construction period, an inspector was sent to our aid from the Engineers' Department, and he reported daily any insanitary condition within the grounds.

BUILDINGS.

The temporary hospital contained one ward, with six cots and eight wicker lounges, a drug room, an operating and examination room, diet kitchen and sterilizing room and office of the Medical Director. The active force on duty day and night began their work July 1, 1902, Dr. Josiah G. Moore being placed in charge of the hospital. Additional members of the staff were appointed as the necessity arose.

On January 7, 1904, the permanent Emergency Hospital was delivered to the Medical Director; it was situated at the east end of the grounds, making one of the group on the Model Street, accessible to the cars and surrounded by the park, one of the most desirable locations for the accommodation of all. In arrangement, it was well adapted for its purpose; it was built of wood, and was two stories high; the lower floor was covered with granitoid. On this floor there were two wards, each containing twelve beds and six wicker couches; one ward was set apart for men and one for women. Two other rooms were constructed, one for isolation and the other for sunstrokes. The latter room was especially fitted up for emergency in case of a hot season, but was found to be useless as there was not one case of insolation to care for. In the rear of the building were located the general operating room, the dressing room and the sterilizing room, all of which were fitted out with a complete hospital supply of the very latest and improved instruments used. I wish, in connection with this, to note that these were contributed without charge to the Exposition by the firm of Blees-Moore & Co., of this city; also all dressings and every need was furnished by them promptly and freely. At the entrance, were located the offices of the Medical Director, the staff, an *x*-ray room, the superintendent of nurses, chief of sanitary department, storeroom, drug room, and diet kitchen; on the second floor were the dormitories for the staff, nurses and attendants. The kitchen was used to prepare meals for the attendants; and

5. Richardson: Boston Med. and Surg. Jour., 1902, vol. cxlvi, p. 224.

under the direction of the nurses, soups and various stimulating delicacies were prepared for the patients. It was a rule to remove all patients from the hospital before 10 p. m., but in a few cases they were allowed to remain over night owing to the inability to secure ambulance service from outside the grounds. I wish to acknowledge, in this connection, the prompt response with which the city department answered all the calls on them, not only with transportation but with willingness to care for all who sought aid at the public institutions.

AMBULANCE SERVICE.

An ambulance was placed at the service of this department at the beginning of the construction period. It was under the charge of David Stewart, who, during the exposition, became chief of the corps, and served in this capacity with eminent satisfaction, having had a number of years' experience in the Hospital Department of the Army. One ambulance was sufficient to care for all the calls and not until the dedication day was there any need for additional service. On that day, the city placed two ambulances, three surgeons and five nurses at the disposal of the Medical Director; these were located at a sub-station in the Administration Building. One surgeon, with the two house surgeons at the temporary Emergency Hospital, and three nurses, with an additional ambulance, made the complement assigned to that point. In the Liberal Arts Building, where the exercises were held, a station was established under the charge of Dr. L. P. Walbridge, who was assisted by two nurses, a sufficient number of assistants to meet all demands on that occasion, where there were more in attendance than on a like exercise of any previous exposition. During the presence of the greatest crowds, on and after the opening day, the two ambulances, well equipped and provided with a surgeon, a driver on duty constantly and a police officer, made up the complement that was able to meet all the demands of every occasion. Great apprehension was felt lest we should not be able to care for the various occasions with large attendance but we were favorably disappointed in finding that, owing to the splendid care on the part of the guards and police officers on the spacious grounds, and owing to the sense of responsibility of the citizens of St. Louis endeavoring to make the Exposition not only the greatest, but the most orderly and desirable place for its people and their guests to visit, there was a smaller number to treat during the greatest attendance. This was noticeably so on Dedication Day, Opening Day, Saint Louis Day, President's Day, Missouri Day, Fourth of July and D. R. Francis Day.

The following rules were established for the government of the corps:

1. Two surgeons shall be on duty at the hospital, aided by one nurse in the operating room and one in the ward, their hours of service being from 8 a. m. until 3 p. m.; and a like number from 3 p. m. until 11 p. m.

2. One ambulance, with its attendant surgeon fully equipped for any emergency, and usually a metropolitan police officer, shall be on duty constantly, subject to the call of the chief, who shall receive all messages and convey the same to his subordinates.

3. The commandant of the "Guards" instructed all his subordinates to aid in every possible way in caring for the sick and injured before the arrival of the surgeon and his aids, and in assisting in placing them properly for transportation in the speediest time.

4. Every consideration must be shown by all employes of the Exposition to the sick and injured, and under all circumstances the patient must be taken to the hospital in the shortest time possible.

5. No one shall be allowed to take the ambulance or wagons used by the visiting physicians off the grounds, except by permission of the Medical Director, and under no circumstances is any one allowed to ride in any of the wagons except those in their line of duty.

By the order of the President, approved by the Superintendent of the Division of Works, the Medical Department was given the right of way and by common consent this was agreed to by every one on the grounds.

6. In every case a written report must be made to the medical director or to his representative, a copy of which is to be placed on file; likewise a more extended report shall be made by the representative of the accident insurance company with whom the corporation is insured. By so doing the legal right of the corporation may be protected.

7. The equipment of stretchers and appliances must be distributed over the grounds at such places as can be easily reached by guards and other employes near at hand; likewise all officers must be trained in their use.

Lastly, the strictest decorum and courtly attention must be given to all, avoiding noise, undue haste or any semblance of rudeness to those who come under your care. When any controversies arise they are to be referred to the chief of this department, or to his immediate representative.

LEONIDAS H. LAIDLEY, Medical Director.

SANITATION.

The sanitary section was organized early in the work of this department. During the construction period Dr. L. P. Walbridge, in charge of the work of visiting the sick in the camps and also in inspecting the grounds, with the inspectors in the Engineers' Department, were able to report daily any unsanitary condition, which was ordered abated immediately. This duty devolved on the Chief of the Engineers' Department, Mr. Richard H. Phillips, and it is my pleasure to testify to his efficiency and promptness in discharging every duty. A number of camps were established on the grounds to accommodate the workmen and their friends, which required special regulations for their government. The following order was issued in order to control the health of those residing within the grounds:

1. The Louisiana Purchase Exposition Company will furnish prompt and competent medical or surgical service without charge.

2. No one in the camps will be permitted to employ a physician not employed by the exposition company without the approval of the Medical Director.

3. Under no circumstances will a case of any contagious or infectious disease be permitted to remain on the grounds.

4. All cases of illness should be reported to the Emergency Hospital, or, if the patient be unable to go to the hospital, report should be made to the sanitary inspector, who will see that the proper notice is given to the medical department.

L. H. LAIDLEY, Medical Director.

The above rules greatly aided in keeping the grounds under surveillance and aided the detection of any contagious disease. The disposition of garbage and waste from the camps elicited no little concern at first, but a police regulation compelled all to use the improvised water closets consisting of openings in the ground, well disinfected with sulphate of copper and chlorid of lime, and garbage, was destroyed daily in a crematory established for that purpose.

The spring water found on the grounds was examined by Dr. Carl Fisch, bacteriologist, and was found to contain many colon bacilli. An order was issued forbidding every one from using it under penalty of being driven from their camps. The city water was freely furnished by hauling until a connection with the city mains was established, furnishing comparatively pure water. During the Exposition period, a supply of water was furnished by the special water mains and pipes furnished for sprinkling and general use, except for drinking purposes. Water for drinking was provided by the Exposition Water Company in machines and booths furnished for the purpose. This water was transported from DeSoto, Mo.; it was taken from an artesian well, which after most careful examination was found to be free from micro-organisms. During the early part of the Exposition a long-felt want was met by the improvement of the water furnished by the city in the removal of all vegetable matter, leaving a clear and comparatively healthy water. The sewering system provided by the Superintendent of the Division of Works was all that could be desired.

The garbage was collected every night and in part through the day, carted to the southwest part of the grounds, where it was cremated in a manner demonstrating all the new and well approved methods of caring for the refuse of a city.

In the appointment of James M. Gassoway, M.D., Lieutenant-Colonel, U. S. Marine Hospital Service, as Sanitary Officer, June 14, 1904, began the final and efficient organization of the Sanitary Department of the World's Fair. Dr. Gassaway made daily inspection of all parts of the grounds, reported all insanitary conditions to the President and issued a warning to all who might be responsible for insanitary conditions. In dealing with concessionaires and those who were located on the "Pike," in order to avoid the trouble in other Expositions, a clause was inserted in every contract which gave the Medical Department absolute authority to cancel their contract unless they obeyed the rules of this department. I am happy to say that the extreme penalty was not resorted to and that the grounds, especially that part occupied by the live stock, were kept in a sanitary condition, as the following report from Chas. F. Mills, Superintendent of the Live Stock Department, will indicate:

In compliance with your request I have the honor to report that the precautionary measures taken by the Exposition to insure the health and freedom from exposure to disease of the live stock exhibited at the World's Fair resulted in having the best of sanitary conditions provided.

The exhibit of live stock held in connection with the Exposition was the largest in point of numbers on record, and the displays came from all of the breeding districts of the world and over all the leading lines of transportation.

The various classes of live stock, including horses, cattle, sheep, swine, poultry, dogs, etc., in succession were on exhibition with short intervals during the heat, cold and storms incident to the season extending from Aug. 22 to Nov. 12, 1904.

The careful daily inspection revealed no evidence of any disease among the stock while on exhibition at the World's Fair, and the chief veterinarian gave all applicants a clean bill of health with permits for outgoing shipments of all classes of live stock.

The lavatory service was especially troublesome for a time, but with the use of scrubbing and the free use of kresol as prepared by Parke, Davis & Co., bad odors and other difficulties were overcome. I wish to note the scientific manner in which this product was used by the sanitary expert during the summer months.

The question of contagious diseases being allowed to remain on the grounds was attended with great concern, especially on the arrival of strange people from every part of the earth. This was especially so of the Philippinos. On their arrival, a number of them had smallpox, one or more having died in transit. All persons who could not give a perfect bill of health were excluded from the grounds and those who remained on the grounds were vaccinated. This rule was adhered to without exception. During the Exposition beriberi appeared; there were forty-five cases with three deaths. Not being familiar with this form of illness, there being little to learn from the literature on the subject, it caused great alarm on the part of the Fair officials and for a time it was a serious question whether the infected tribes should not be immediately returned to prevent its spread. Dr. Carl Fisch, the official bacteriologist, with Surgeon Gassaway, made their report prompting a delay for action in the matter. Dr. Hunt, who was in charge of the Iggorotes, contended that it was due to a faulty diet and that it was not communicable to those who were not similarly situated. The food as to quality and preparation was changed and immediately there was an improvement noted in most of the cases. Dr. Fisch made postmortems on those that died demonstrating the character of the disease, as follows:

The observations that I have had an opportunity to make on a number of the cases of beriberi occurring among the natives encamped on the Philippine reservation have yielded nothing that would add to the knowledge so far obtained about the character or the etiology of this disease. The impression that clinical study, as well as the postmortem examination gave was, however, decidedly that of the effects of a chronic or more acute intoxication. The nature of the toxic substance could not be discovered, although the result of two autopsies very much suggested the presence of a chronic infection, analogous in its pathologic effects to those of, for instance, malaria or trypanosomiasis. Careful search in the blood and tissues (especially the spleen) for anything resembling parasitic organisms was negative. Cultures made from tissues taken at autopsy yielded only the ordinary forms. Guinea-pigs, rats and rabbits injected subcutaneously and intraperitoneally with cultures of spleen, and portions of various nerves from two cases coming to autopsy remained well and showed no symptoms of disease, except one rabbit, which died from a purulent (staphylococcus) peritonitis.

It can not be decided, therefore, whether the intoxication is due to a toxic substance, or whether it is the product of a toxin-forming parasite. The epidemiology of the disease certainly points to the latter conclusion; this, too, is suggested by the variability of the clinical course that was observed, most cases being mild and chronic, and recovering, while others showed the pernicious form and ended life in a few days. As there is no reason to assume that a toxic agent could have been ingested by these patients, under the conditions under which they were kept (some cases seem to have developed primarily at the reservation), that would not have affected in the same way a greater number, the analogy with other infectious diseases presents itself.

Against a bacterial infection are to be adduced the findings at autopsy. The blood in both cases examined (Moro Peplon 7-28-1904 and Iggorote 8-27-1904, the latter a case of fulminant disease) was found to be sterile, even at autopsy. As before mentioned, cultures from the tissues yielded no results either. The histologic tissue changes were all of a character that would exclude the action of a bacterium in bringing about inflammatory reactions, although they to a degree resembled those, for instance, found after tetanus and hydrophobia. The pronounced enlargement of the spleen, with all the evidence of a chronic congestion, was the most characteristic finding in both cases, although, of course, it is doubtful whether it was a consequence of the disease itself. For the Iggorote case, running a course of only a few days, other causes are more probable. The heart, in both cases, exhibited the picture of a chronic interstitial hepatitis. The neuritic processes were very marked in all cases examined, leading often to a complete degeneration of the fibers. They were more advanced in the Moro case, where secondary proliferation of the perineurium and endoneurium had taken place, while, for the Iggorote, the picture of a fresh degenerative change of the fibers obtained.

HOSPITAL RECORDS.

The character of surgical and medical cases treated during the construction period afforded a fine field for surgery, especially the cases due to violence and to falls from great heights, which comprised a list of injuries of the thoracic, abdominal and pelvic viscera. The extremities likewise suffered to a great degree in fractures and dislocations. In most cases in which death ensued there was found rupture of the stomach, liver or other of the vital organs, which with shock produced immediate or ultimate death. A number of workmen escaped fatal results after falling fifty feet or more, and in one case, during the local cyclone where eight persons were injured, one patient fell one hundred and twenty feet, suffering little injury. The number of gunshot wounds were not very numerous, only one death resulting from that cause; fourteen perforations were found in this case, and death was caused by hemorrhage. One of the cases was of such importance at the time that I hope I may be pardoned in giving a short report of the same:

Patient.—E. M., Aged 18, a visitor, of remarkably vigorous constitution and of unexceptional health, was shot in the abdomen during a brawl on the Pike at the Saint Louis World's Fair, June 18, 1904. He was admitted to the Emergency Hospital on the grounds, and within one hour an abdominal section was made.

Examination.—It was found that the ball had passed through the abdominal wall near McBurney's point, passing inward and slightly downward. On examining the viscera, it was found that the ball had penetrated the cecum, making two openings, one in front and another behind, and had passed down into the soft parts lining the pelvis.

Treatment and Result.—These openings were closed up by Lembert sutures, the abdomen was cleansed of large quantities of blood and escaping contents of the bowel, and the incision was closed with through-and-through sutures. The patient left the table within an hour under very favorable circumstances, the pulse being 72 and temperature normal. The next morning he complained of great pain in the hip joint, and was unable to move that limb. For ten days his condition was favorable, then he gave evidence of disturbance, especially about the joint. Chills and fever and increased pain suggested an examination with the *x*-ray, which would have been done earlier had we been provided with such an appliance. On July 11, an incision was made over the joint, disclosing the presence of pus outside of the joint, which was opened, showing that all of the head of the bone within the capsule was entirely destroyed and fractured; the acetabulum also was fractured and necrosed. Following up the course of the bullet, the missile was found lodged in the upper and outer margin of the cavity of the socket and was removed. The necrosed portions of the bone were chiseled out, the dead portion of the head of the femur was removed, the cavity was curetted, packed with gauze, and thoroughly drained. The patient afterward showed evidences of sepsis, which prompted me, on Juy 22, to reopen the wound, wash out the cavity and introduce further drains. These are continually used up to the present time.

Subsequent History.—About three weeks ago he manifested evidence of acute nephritis. On examination, it was found that he had a large quantity of albumin, with casts, evidently due to toxemia, as in scarlet fever. Since that time, by repeated cleansing of the cavity and thorough drainage, these evidences are disappearing, leaving him in a fair condition for recovery. The subsequent treatment will be to free the cavity and its surrounding structures of all suppuration, and by that means we hope to restore our patient to normal health, probably leaving him with a shortening of the limb, and perchance a degree of ankylosis.

At the time of writing I am happy to report the recovery of the patient with only one inch shortening of the limb.

SUMMARY OF CASES TREATED AT THE EXPOSITION.

I hereby present a summary of the cases treated from the beginning of construction period to December 1, 1904:

LOUISIANA PURCHASE EXPOSITION MEDICAL DEPARTMENT. SUMMARY OF WORK DONE AT EMERGENCY HOSPITAL DURING THE CONSTRUCTION AND EXPOSITION PERIODS.

CASES TREATED.

	Construction period.	Exposition period.							
		May	June	Jly	Aug.	Sept.	Oct.	Nov.	Total.
New—									
Surgical ...	3,412	499	515	467	489	472	388	284	6,326
Medical ...	2,736	436	650	815	740	884	728	392	7,381
Retreated—									
Surgical ...	3,920	787	612	621	499	446	454	353	7,692
Medical ...	2,758	678	886	824	820	625	411	444	7,446
	12,826	2,400	2,663	2,727	2,548	2,427	1,981	1,473	29,045

New cases, construction period	6,148
New cases, exposition period	7,759
Total	13,907
Cases retreated, construction period	6,678
Cases retreated, exposition period	8,460
Total	15,138
Grand total	29,045

DEATHS.

Deaths from violence during construction period	11
Deaths from natural causes during construction period	5
Total	16
Deaths from violence during exposition period	12
Deaths from natural causes during exposition period	12
Total	24
Grand total	40

BIRTHS.

Births during construction period	3
Births during exposition period	4
Total	7

AMBULANCE CALLS.

The ambulance responded to the following number of calls:

May	168
June	172
July	210
August	224
September	253
October	191
November	97
Total	1,315

CLASSIFIED LIST OF CASES.

	Construction Period.	Exposition Period.	Total
Abscess	110	170	280
Abortion	2	8	10
Adenitis	5	11	16
Alcoholism	12	32	44
Appendicitis	1	13	14
Arterioscierosis	1	0	1
Asthma	3	10	13
Beriberi	0	45	45
Bronchitis	106	83	189
Burns	51	122	173
Common cold	476	201	677
Contagious diseases	43	33	76
Conjunctivitis	42	123	165
Dermatitis (poison ivy)	27	10	37
Diseases of skin	43	138	181
Diarrhea	150	233	383
Dislocations	12	26	38
Dysentery	9	9	18
Enteritis	10	4	14
Epilepsy	18	32	50
Epistaxis	2	13	15
Exhaustion	12	225	237
Exhaustion (heat)	13	0	13
Fever, intermittent	776	413	1,189
Fever, typhoid	16	7	23
Foreign bodies in eye	110	306	416
Fractures, compound	4	6	10
Fractures, Colles'	14	11	25
Fractures, femur	3	5	8
Fractures, long bones	74	48	122
Fractures, miscellaneous	43	22	65
Fractures, skull	16	7	23
Fractures, spinal column	1	0	1
Frost bites	6	0	6
Gastritis	21	26	47
Heart disease	15	17	32
Hemoptysis	5	9	14
Hemorrhoids	16	16	32
Hernia	9	6	15
Hysteria	2	30	32
Indigestion	291	991	1,282
Insanity	2	6	8
La grippe	55	15	70
Laryngitis	15	5	20
Nephritis	2	10	12
Neuralgia	49	63	112
Otitis	15	33	48
Paralysis	2	0	2
Pharyngitis	19	116	135
Pleurisy	4	14	18
Pneumonia	7	6	13
Poisoning	3	9	12
Rheumatism, articular	56	91	147
Rheumatism, muscular	46	47	93
Sprains	263	222	485
Sunstroke	2	0	2
Syncope	17	136	153
Tonsillitis	115	92	207
Tuberculosis	11	3	14
Ulcers (unclassified)	16	5	21
Vertigo	16	7	23
Venereal diseases	21	11	32
Wounds, abraded	45	62	107
Wounds, contused	805	411	1,216
Wounds, incised	189	204	393
Wounds, infected	282	349	631
Wounds, lacerated	487	414	901
Wounds, punctured	486	174	660
Wounds, scalp	185	102	287
Wounds, gunshot	0	18	18
Wounds, unclassified	5	16	21
Miscellaneous, surgical	137	491	628
Miscellaneous, medical	221	1,166	1,387
Totals	6,148	7,759	13,907
Retreated	6,678	8,460	15,138
Totals	12,826	16,219	29,045

EXPENSES.

Pre-exposition period—	
Dec. 6, 1901, to April 29, 1904	$22,052.24
Exposition period—	
April 30 to Dec. 1, 1904	14,375.47
Postexposition period—	
Dec. 2, 1904, to Feb. 15, 1905	795.00
	$37,222.80

In making this report I cannot fail to form conclusions concerning the work of this department of the Exposition; I believe that a permanent staff, including nurses, is the best, and that one well equipped hospital with an efficient ambulance service, without substations, is the most desirable and efficient in a work of this kind.

Special Article

IMMUNITY.

CHAPTER XV.

CYTOTOXINS.

Following the discovery of immune hemolytic serums it was a short step to experiments which involved immunization with various other tissue cells, and as a result of such work we are to-day familiar with antiserums for almost every organ of the body.

Cytotoxin or Cytolysin.

Metchnikoff gave the name of cytotoxins to those serums which destroy cells other than bacteria and erythrocytes; the word cytolysin is used synonymously. Naturally a serum which destroys any cell whatsoever is a cytotoxin, but according to the rather loose custom which prevails, we may properly recognize bacteriolysins, hemolysins and other cytolysins, including among the latter serums which destroy leucocytes, the cells of the liver, kidney and other organs.

Theoretical Utility of Cytotoxins.

Cytotoxins are of interest, not only because they are produced in accordance with the general laws of antibody-formation, but they have had and perhaps still have a special theoretical importance. Immediately on their discovery the possibility was evident that they might be utilized in the elucidation of certain physiologic and pathologic problems. For example, by putting the thyroid out of function through injections of thyrotoxic serum it might be possible to confirm, or to prove incorrect, certain theories as to the rôle of the gland in metabolism. Or, by the selective destruction of a tissue, facts concerning its regenerative powers might be learned. The use of an antipancreatic serum might throw some light on the nature of diabetes. Therapeutic possibilities also suggested themselves. Anticytotoxic serums might counteract cytotoxins which were being formed in the body. Or, by injecting a small amount of a cytotoxin, perhaps one could stimulate to a renewed production of the homologous cells; small doses of a hemolytic serum might be useful in combating anemias. Or small amounts of leucotoxic serum might cause an increase in the number of leucocytes, and thereby an increased resistance to infection. Per-

haps autocytotoxins are formed in some such manner as the following: An extraneous toxic substance causes the destruction of a few kidney cells, the constituents of the latter reach the circulation and stimulate other organs to the formation of autonephrotoxic amboceptors, which then assist in the destruction of more renal tissue, with the result that a vicious cycle is set up.

Lack of Specificity.

In spite of so many theoretical values the study of cytotoxic serums has not yielded the results which were anticipated, perhaps chiefly because of their lack of specificity. Although the cells of the different organs may differ widely in their morphology and function there are no doubt certain chemical constituents (receptors) which they possess in common. Of this we have experimental proof from the fact that immunization with one type of cell often yields a serum which is toxic for the cells of various organs. It is difficult or impossible to injure one organ to the exclusion of all others. One may attempt to purify a cytotoxic serum through absorption of the adventitious amboceptors by means of the corresponding cells; inasmuch, however, as the result is a decrease in the chief amboceptors as well as of the adventitious, the desired object was not fully realized. Theoretically the cytotoxic treatment of malignant tumors offers an important field for research. But here, too, various difficulties are involved, as lack of specificity of serums, the multiplicity of cell-types which constitute different tumors, and other points which will be considered later.

Determination of Cytotoxic Action.

Experiments with cytotoxic serums may be conducted *in vitro* or in the living animal. In either case a necessary condition for the recognition of the cytotoxic action is the presence of some distinctive sign of vitality on the part of the cell, the loss of which may be taken as evidence of cell-death. Loss of motility and of proliferative power indicate the death of bacteria, and solution of hemoglobin the death of erythrocytes. Under particular conditions loss of motility on the part of certain tissue cells, as spermatozoa, leucocytes and ciliated epithelium, is an evidence of cell death or cell injury. The toxic action of serums on cells of fixed form is more difficult to determine, and for evidence one must rely on such points as clearing of the protoplasm (digestion?), swelling of the cell and nucleus, actual solution of the cytoplasm, or degenerations of the homologous organs when the serum is injected into the living animal.

Amboceptors, Complements and Anticytotoxins.

Cytotoxins, like bacteriolysins and hemolysins, are complex substances, in that they consist of amboceptors and complements. The amboceptors alone are increased during immunization, the complement being a normal constituent of the serum of the animal. The phenomena of inactivation and reactivation are observable here as in connection with other cytolytic serums. Anticytotoxins are readily produced by immunization with many cytotoxins; the antiserum usually consists of anticomplement, but in some instances antiamboceptors have been described. Immunization with solid organs is easily accomplished, a necessary preliminary for injection being a thorough disintegration of the tissue by grinding with sterile sand; the resulting mass when suspended in salt solution passes through the injecting needle readily.

Spermotoxin.

Simultaneously, or nearly so, Landsteiner in Vienna and Metchnikoff in Paris reported the production of spermotoxic serums by immunization with spermatozoa, the natural motility of which rendered the recognition of cell death easy. The technic which Landsteiner first employed was that of the Pfeiffer experiment in that he immunized guinea-pigs with the spermatozoa of cattle and observed loss of motility on the part of the cells when they were injected into the peritoneal cavity of the immunized animals. Comparable with many other cytotoxins, spermotoxin kills the homologous cell without causing its solution. The loss of motility is also observed in hanging-drop preparations provided a fresh or a complemented serum is used. Most normal serums show a greater or less degree of toxic action for the spermatozoa of other animals, and normal spermotoxins like the immune consist of amboceptor and complement. Metchnikoff claims to have produced an autospermotoxin by immunizing guinea-pigs with the spermatozoa of other guinea-pigs.

When a spermotoxic serum is injected into the living animal it is thought that the amboceptors are taken up by the homologous cells, and this would seem to affect the vitality of the spermatozoa, inasmuch as De Leslie rendered male mice sterile for 16 to 20 days by the injection of the serum.

It is of theoretical interest that castrated animals will yield spermotoxin by immunization, showing that the amboceptors are not of necessity produced by the analogous tissue of the immunized animal. From the fact that spermotoxic serums are hemolytic it is assumed that certain receptors are common to erythrocytes and spermatozoa. Hemolytic serums, on the other hand, may not be spermotoxic. There is nothing contradictory in this lack of reciprocal action, for those receptors which are common to the two cells may not be important for the life of the spermatozoon, whereas the opposite condition prevails with the erythrocyte.

It is certainly of interest that immunization with the plasma of ova causes the formation of spermotoxic amboceptors, a fact which points to certain common constituents of the two cells.

Antispermotoxin may be produced by immunization with spermotoxic serum (anticomplement or antiamboceptor).

Cytotoxin for Ciliated Epithelium.

Following technic similar to that employed by Landsteiner, von Dungern obtained a cytotoxic serum for ciliated epithelium of the trachea; the cells disintegrated in the peritoneal cavity of the immunized animal but not in that of a normal animal. This serum also proved to be hemolytic in spite of the fact that no erythrocytes were included in the injections. That the receptors which characterize ciliated epithelium are widely distributed is shown by the fact that immunization with cow's milk causes the formation of a cytolytic serum for the tracheal epithelium of the cow.

Leucotoxin.

Leucotoxic, lymphotoxic or lymphatotoxic serums are prepared by immunization with exudates which are rich in leucocytes, or with the emulsions of lymphoid organs: lymph glands, spleen, bone marrow. Metchnikoff prepared the first serum of this nature by the injection of the spleen of rats into guinea-pigs. Leucotoxic serums are toxic, not only for leucocytes but also for red corpuscles and endothelial cells. When injected into the peritoneal cavity the endothelium is thrown off, and when given subcutaneously the capillary endothelium is attacked with the result that blood escapes to form a large hematoma. The action of the serum on leucocytes may be observed *in vitro*. The mononuclear cells are often more susceptible than the polymorphonuclears, although this depends somewhat on the animals and the particular organ used for immunization. The cells lose their motility, the cytoplasm becomes transparent, and swells to form a large clear vesicle, which appears to be surrounded by a sharp, thin membrane. The cell contents may be discharged or entirely liquefied, the nucleus alone being recognizable. Leucocytes are agglutinated by the serum. A strong leucotoxic serum may be fatal to the animal when injected into the peritoneal cavity or blood stream, the exact cause of death being obscure.

(*To be continued.*)

Hematuria.—The effect of oxygenated water on blood can be utilized for the detection of the latter in the urine, as pointed out by Sabrazes (*Gaz. Hebd. des Sci. Med. de Bordeaux*). If a few drops of oxygenated water be added to a normal urine of acid reaction there is a slight disengagement of oxygen. If the urine is neutral or alkaline the oxygen is given out much more abundantly. Diabetic or albuminous urine foams perhaps a little more than normal urine. Bile causes very little foam. Any blood content in the urine, however, even if only detectable by the microscope, causes an excessive foaming of the liquid. Pus also causes much foaming, though somewhat less than blood.

Clinical Report

A METHOD FOR MAKING PERMANENT MOUNTS OF SPECIMENS STAINED BY WELCH'S CAPSULE METHOD.

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For purposes of demonstration it is often advantageous to be able to make permanent balsam mounts of specimens stained by Welch's capsule method. I have frequently employed the procedure, which I describe, in making preparations from the blood and exudate of white mice, guinea-pigs and rabbits infected with the pneumococcus and with the *Streptococcus mucosus capsulatus*.

It is well known that the best pictures are obtained when the specimens are mounted in some fluid, such as the 2 per cent. watery saline solution. The capsules of the pneumococcus and *Streptococcus mucosus capsulatus*, taken from infected animals, when stained by the Welch method, present a fairly well limited, almost hyaline appearance when examined in a fluid. If such specimens be dried and mounted in balsam, the capsules are no longer visible. At times a number of faintly stained, poorly outlined capsules will remain, but only very rarely can a good preparation be obtained if balsam be used.

The following procedure will enable one to make satisfactory balsam mounts:

After washing off the gentian violet solution with a 2 per cent. saline solution, the specimen is rapidly flushed with a 5 to 10 per cent. solution of potassium ferrocyanid, dried between filter papers, and mounted in balsam.

Specimens treated in this way are but little changed. The clearness of the general picture and the definition and beauty of the capsule suffer somewhat, but the results are satisfactory and permanent. If desired, the preparation may be examined first in the salt-water and then may be made permanent by this method.

I have examined the subcutaneous and peritoneal exudates of a large number of white mice and guinea-pigs, inoculated with the pneumococcus and *Streptococcus mucosus capsulatus* by means of the Welch stain and have often found that the following "rapid" modification has been time saving and has given eminently satisfactory results.

When the exudates are thin, as a rule they can be spread on a cover-slip without a diluent. The procedure may be outlined as follows:

1. Spread on a cover-slip and fix by heat.
2. Glacial acetic acid, five seconds; drain off.
3. Flush twice with anilin-water gentian violet.[1]
4. Saline wash, and mount; or
5. Flush with a 5 to 10 per cent. potassium ferrocyanid solution, dry with filter paper and mount in balsam. A preparation can be completed in from 30 to 40 seconds.

A similar method has proved successful in the preparation of permanent mounts of specimens stained by the capsule method which I recommended in a previous article.[2] It has been found applicable to specimens made from cultures as well as from exudates.

Although the employment of the rapid method, with or without the potassium ferrocyanid solution, has regularly given me good results in the exudates of test animals, my experiments with sputum have been too few to warrant drawing any conclusions in regard to it. Specimens of exudates containing the pneumococcus and the *Streptococcus mucosus capsulatus*, stained in the way described and mounted in balsam, have not undergone any change after a period of three months. It seems very probable, therefore, that they will remain permanent after the lapse of even a longer period of time.

1. A weaker anilin oil gentian violet solution than is ordinarily employed for the Gram stain has been found just as serviceable. It is made up as follows: Anilin oil 10, water q. s. 100. Shake, filter; add 5 c.c. saturated alcoholic gentian violet solution.

2. Medical News, Dec. 10, 1904.

New Appliance

THE GAVIN OPERATING ROOM BASIN.

S. GRIFFITH DAVIS, M.D.

BALTIMORE.

About eight years ago Dr. F. D. Gavin, superintendent of the Church Home and Infirmary, devised a simple basin for the operating room. This basin has given so much satisfaction that it may be well to bring it before the profession.

As can be seen from Figure 1, it consists of a frame which fits into the usual rectangular basin sink. This frame is composed of silver-plated tubing about three-eighths of an inch in diameter. Occupying the center of the frame is a circular opening into which an ordinary porcelain basin can be placed. The ring that supports the basin revolves from right to left through a quarter of a circle.

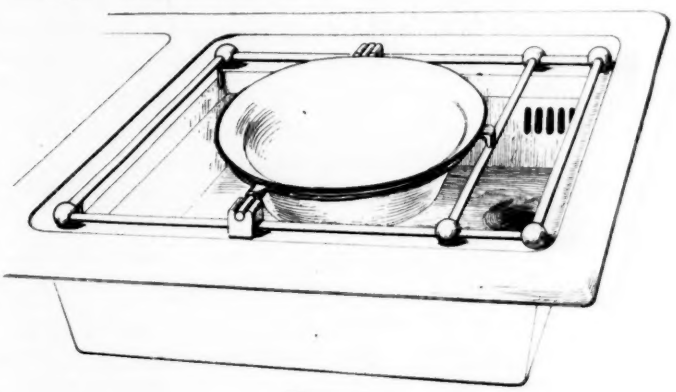

Figure 1.

The basin is easily emptied by the hands in the basin. The left hand presses downward, the right prevents the basin from tipping over too far. The lever principle is employed, the axis or revolving point being two-thirds of the distance toward the left of the circle (Fig. 2).

The chief advantages of this basin are:

1. It is very simple and cheap.
2. If out of order it can be repaired by any machinist.
3. It will accommodate a simple porcelain basin that can be purchased in any hardware store.

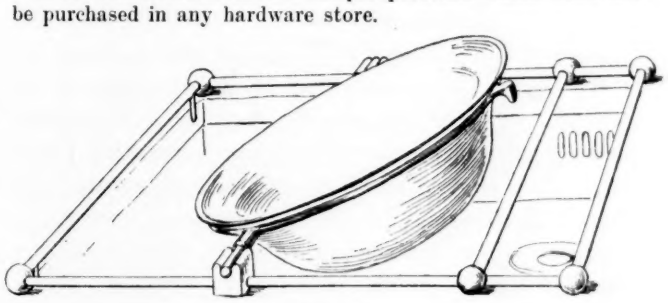

Figure 2.

4. The frame and basin can readily be placed in the sterilizer and steamed.
5. Fresh basins can be used for each operation.

The complete frame and basin should not cost over five dollars. That they have answered their purpose well is evidenced by the fact that those employed at the Church Home have been in continuous use for over eight years.

The question of the foot treadle and of continuous running water has purposely been omitted, as these may be adapted to this or to any other basin.

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THE CURE OF CANCER BY X-RAY.

The determination of the limitations and possibilities of the therapeutic application of *x*-ray is undoubtedly one of the important questions before the profession today. The whole subject of radiotherapy is one which appeals strongly to the imagination and to popular interest. Two years ago it was suggested that in time the use of radium would supplant the use of *x*-ray and the subject of the therapeutic use of radium was one which excited great popular interest. But radium has not thus far fulfilled its early promises as a therapeutic agent, and interest in it has subsided. With *x*-ray the situation is different. It is being widely used, and, it is to be feared, a good deal abused, and it is therefore highly important that there should be a definite comprehension of its field of usefulness.

The report in this issue of THE JOURNAL by Dr. Pusey, in which he gives his results of the use of *x*-ray in various affections, more particularly malignant tumors, is presented in so careful and conservative a manner that there is little or no danger of arousing unfounded hopes. In the face of evident temptation to advance extravagant claims, Dr. Pusey continues to maintain a critical attitude which is highly commendable. The use of *x*-ray in the treatment of malignant tumors is wholly empirical. An enormous amount of experience and observation is necessary before the exact limits of its usefulness in this field may be determined. At the present time we have little evidence that *x*-ray has any real value in the treatment of internal cancer. It is true that we have reports of recessions, of arrest of growth, even of symptomatic cures of internal cancers during treatment with *x*-ray, but as yet we have no reports of absolute cures that can withstand criticism. The clinical course of cancer, internal as well as external, is variable. Periods of apparent recession follow periods of progress. Every physician and surgeon has observed that patients with cancer sometimes continue to live in comparative comfort even for years after the unquestioned development of metastatic tumors in vital organs. It is part of the natural history of the scirrhous form of carcinoma, for instance, to advance with comparative slowness at the outskirts while in the central part cicatricial shrinking equivalent in many cases to a kind of spontaneous healing is taking place. There is, indeed, very good reason to believe that while the human being "in the majority of cases falls victim to the invasion of carcinoma once started, yet it is not altogether without the calling into operation of opposing forces that this sad result is achieved."

Under these circumstances and at this time a correct estimate of the value of *x*-ray in internal cancer is, therefore, out of the question, and startling reports—"too good to be true"—of the great changes produced in a comparatively short time by *x*-ray in individual cases should not be permitted to unbalance conservative judgment in the slightest degree. Indeed, the publication of reports of the character mentioned, at the very best in every sense premature, is reprehensible because they tend to lessen respect for scientific conservatism and truthfulness of the medical profession.

APLASTIC ANEMIA.

The hematologic studies of recent years have not only more clearly defined existing blood diseases, but have also brought to light conditions not heretofore known. This has been the case particularly since stress has been laid on the importance of a study of the blood-forming organs as well as of the circulating blood. We are, in fact, coming to recognize more and more that the lesions in the lymph nodes, spleen, and particularly in the bone marrow, are the criteria on which our conceptions of these diseases must be based, and that the blood picture is merely a symptom.

The condition known as aplastic anemia was first described by Ehrlich nearly twenty years ago, but until recently the reported cases have been so few in number that general attention has not been directed to it. Within the last year or two a considerable number of cases has been recorded, and it would seem that the condition is not nearly so uncommon as was at first supposed. Probably many cases have been overlooked on account of the clinical resemblance to ordinary pernicious anemia. As the name indicates, the condition is one in which a clinically grave anemia is unaccompanied by the ordinary regenerative changes in the circulating blood. There is an almost complete absence of nucleated red cells, and, further than this, there is in most cases a great diminution in the leucocytes. As few as 200 white cells to the cubic millimeter of blood have been noted, a truly remarkable reduction from the normal. Qualitative changes of a marked character are also present in most cases. Over 90 per cent. of the leucocytes may be of the mononuclear type, eosinophiles may be entirely lacking over long periods of time, and polynuclears are strikingly rare. The cases may run an acute or chronic course, though the former is more common. Some of them show hemorrhagic tendencies, purpuric skin eruptions, oozing from the mucous membranes, hemorrhages into the retina. Fever and enlargement of the spleen may be noted, as in the cases in old people recently described by Kurpjuweit.[1] The

1. Deutsches Archiv für klin. Medizin, vol lxxxii, Nos. 5 and 6.

pathologic picture in these cases seems to have varied somewhat, though the variations are not great if we consider all the recorded cases together. It seems likely that the supposed variations are merely different stages of the same process. Superficially scanned, the complete bone-marrow aplasia which has been found in some cases seems pathologically irreconcilable with the complete lymphoid hyperplasia which has been found in others. A search of the literature shows, however, that intermediate cases exist. There are cases on record in which aplasia was present in the marrow of some bones, while lymphoid hyperplasia existed in the marrow of others. Again, there is at least one case, that of Wolff, in which to the naked eye aplasia was present, though smears of the marrow showed the qualitative changes of lymphoid hyperplasia. It seems quite possible, in fact probable, that the condition of aplasia is a terminal one, and that at some time a lymphoid hyperplasia is present in all cases.

A question naturally arises as to the nature of this lymphoid hyperplasia. It is essentially the lesion ordinarily found in the bone marrow in lymphatic leukemia. Inasmuch as cases of lymphatic leukemia with lesions only in the bone marrow are now well recognized, we can see no reason why aplastic anemia should not be regarded as an atypical form of this disease. We know that in other cases of lymphatic leukemia the number of leucocytes in the circulating blood may be normal or even subnormal. Why should we not have a combination of these two unusual types in some cases? Certainly this assumption helps us to explain both the leucopenia and the lack of red-cell formation. If we assume, as Senator does, that the hyperplastic lymphoid cells of the bone marrow are the parent cells of both the erythrocytes and the granular leucocytes, their proliferation, with failure to differentiate, explains the whole process. It is true that this is only an hypothesis, but it is such a reasonable one that it seems worthy of provisional support until it is either confirmed or disproved by future observation.

A NEW FORM OF SERUM DIAGNOSIS.

The agglutination test of serum is now universally employed in all hospitals and to no small degree also in private practice in the diagnosis of typhoid fever and kindred diseases. There are other diseases in which a practicable serum diagnosis would be a welcome addition to our diagnostic armamentarium, e. g., staphylococcus infections. Staphylococci may cause hidden abscesses, acute endocarditis, and peculiar solid chronic inflammatory swellings of bones that often are difficult to distinguish from genuine tumors. Specific agglutinins do not appear to develop to any extent in staphylococcus infections, but it has been shown that all pathogenic staphylococci produce a hemolysin and furthermore, that this lysin is a genuine toxin because it gives rise in animals (including human beings) to an antitoxin.

Bruck, Michaelis and Schultze[1] propose to apply the determination of this antilysin to the diagnosis of staphylococcus diseases. They assume that in every staphylococcus infection there must arise at some time a demonstrable increase of the normal antistaphylolytic powers of the serum. They determined that in the case of normal serum 0.1 c.c. is, as a rule, sufficient to neutralize 0.05 c.c. of staphylococcus filtrate, which quantity contains, on an average, sufficient lysin to lake one drop of fresh rabbit blood. In 19 of 25 sera from patients with definite staphylococcus infection the antilytic power was increased from 10 to 100 times that of normal serum. In the remaining 6 cases the authors found considerable increase in antilytic power, but they think that the relative low degree of increase was due to the recent date of the infections. It seems that the antilysin develops gradually and, of course, the reactive faculty of various persons may vary considerably. So far as we know now, this antistaphylolytic reaction is specific.

It would seem that we have here an interesting specific reaction that merits further clinical study on account of its probable diagnostic value. It concerns a new step in the use of laboratory methods in clinical diagnosis. Perhaps the busy practitioner may say that this test is not practical because it necessitates the facilities of the laboratory and considerable skill and experience in a rather new form of experimentation. Clearly this work is yet in the experimental stage, but it shows well the relation between biologic studies and clinical medicine, a relation of so undoubted benefit in a practical way that the practitioner can not afford to ignore it wholly. So long as practitioners are constrained by virtue of diagnostic inability to make exploratory operations for diagnostic purposes will there be need for new and refined means of diagnosis.

TRUTH AND POETRY CONCERNING URIC ACID.

XVII.

We have reviewed in considerable detail, as we promised to do, the important work that has been done on this subject. The processes of uric-acid formation, excretion, destruction, retention, deposition and solution in health and disease have, one by one, been considered, and we have sifted as carefully as possible what we consider the wheat from the chaff. In a subject so complex it would be surprising if we did not include some worthless matter among the wheat and discard as refuse at least a little valuable grain. Despite the immense amount of work which has been done, it is surprising what a small bulk of well-determined fact has been accumulated and how much time and trouble have been required to prove the unreliability and harmfulness of a majority of the speculative views which have been ad-

1. Zeitsch. f. Hyg. u. Infektionskr., 1905, vol. l, p. 145.

vanced. Though the bulk of facts is not large, their value is precious, and we will do well to hoard them jealously, and to rejoice that we may consider them by themselves, uncontaminated by the paltry rubbish in which they have been hidden.

It is worth much to us on the physiologic side to have grown familiar with the chemical and physical qualities and relationships of uric acid; to have realized its connection with nuclein metabolism; to have become acquainted with the distinction between exogenous and endogenous uric acid of oxidative origin, and between these and the uric acid of synthetic source; to have been informed, even partially, as to the way in which uric acid is destroyed in the body; to have determined, more or less accurately, the localization of the processes of uric-acid formation and uric-acid destruction; and to have recognized that the substance probably circulates in the blood chiefly as mononatrium urate or in combination with an organic acid. On the pathologic side it is important to us to have found out in what conditions deviations from the normal uric-acid relations have been observed and to have discovered that gout is the only disease in which there is yet any strong probability that disturbances of uric-acid metabolism are directly and mainly responsible for the clinical symptoms. It has been shown that uric acid is increased in the blood in gout; that the deposits in the joints and in the tophi in gout consist of crystalline mononatrium urate; that the latter is dependent in all probability on irregularities in uric-acid excretion, including a slight diminution of the amount excreted before an attack and an increase later; that the local deposits at sites of predilection are in some way dependent on unknown local influences; that the acute gouty paroxysm is very prone to occur in the night; that the anomaly of metabolism responsible for gout is often met with in a succession of generations in the same family; that the development of gouty symptoms in the predisposed may be favored by excessive eating, lack of exercise, abuse of alcohol, chronic lead poisoning, and digestive disturbances of various kinds.

The rational treatment of gout will, then, consist, first, in combating the primary disturbance of metabolism; the patient must be protected from all the influences which experience has taught us favor the development of gout. In addition, the effort may be made to prevent the accumulation in excess, or the deposition, of uric acid or urates in the body. This has been attempted in various ways: (1) by lessening the amount of uric acid formed in the organism, (2) by trying to increase uric-acid excretion, (3) by increasing uric-acid destruction, and (4) by making the effort to increase the solubility of uric acid in the blood and tissue juices.

The formation of exogenous uric acid is largely within our power; the amount can be diminished by limiting the forestages of uric acid—nucleins and purin derivatives—in the food. Hence in gout the eating of sweetbreads, liver and kidneys—all rich in nucleins—should be prohibited, and the amount of meat and meat soups permitted should be small. Peas and beans are also rich in purin bodies and should be sparingly allowed. The well-known harmfulness of beer in gout has been attributed by some to its relatively high purin content. The temporary relief afforded by purgatives may be due, in part, to the sweeping out of forestages of uric acid from the intestine before they are absorbed. There is no certain proof that drugs can diminish uric-acid formation, though Weiss has ascribed such an action to china acid. A large number of the much-vaunted "gout specifics" consist of this china acid combined with other drugs, e. g., urosin (china acid with lithium), sidonal (china acid with piperacin), chinotropin (china acid with urotropin), urol (china acid with urea) and "new sidonal" (china acid anhydrid). If china acid affects the symptoms favorably at all, we do not know how it does so; it has been suggested that, being tetraoxybenzoic acid, it is more or less allied to salicylic acid (monoöxybenzoic acid) and so may, like the latter, exercise a pain-stilling effect.

To increase uric-acid excretion the best means we have is to increase the secretion of urine, and that is best effected by copious water drinking; mineral water or any pure table water will do. Whether or not it is possible directly to increase uric-acid excretion by drugs is still disputed. It is thought by some that the salicylates (salicylic acid, salol, aspirin—monacetic-acid-ester of salicylic acid—etc.) increase the excretion of uric acid; others believe that they increase uric-acid formation, and still others think that the amelioration of symptoms caused by them in gout is due only to their pain-relieving and diaphoretic actions. Ideas as to their effects are merely preconceived; they have not yet been subjected to adequate experimental control.

Attempts to increase uric-acid destruction in the body have frequently been made, but there is no proof that there is any general diminution of the oxidative processes in gout, nor is there any basis for the view that drugs hasten uric-acid destruction, though alkalies, oxygen inhalations, thyroid tablets and spermin have all been recommended for the purpose!

The hypothesis which has appealed most to the profession and to the laity, and the one which, on the whole, has proved most profitable to the drug manufacturers, is that which attempts to prevent uric-acid deposits and gouty conditions by trying to increase the solubility of uric acid in the blood and tissue juices. Alkalies and especially bases which form very soluble salts with uric acid have been suggested for this purpose. The attempts are futile for two reasons. In the first place it has not yet been found possible, owing to the complexity of the blood and the tissue juices, to produce in them exactly the form of urate, the solubility-conditions of which are the most favorable. In the second place, the studies of His and Paul, applying the modern conceptions of physical chemistry, have shown that the solubility of any urate in the blood is decreased by the sodium

salts of the blood. It does no good to bring into the solution along with mononatrium urate other bases whose uric-acid salts are more soluble than sodium urate; for physical chemistry has shown that on bringing an acid together with several bases the first salt to fall out is that whose "solubility product" is smallest. This fact holds not only for inorganic bases, like lithium, but also for organic nitrogenous bases, like piperacin (di-ethylen-diamin) and lysidin (ethylen-ethenyl-diamin), from which so much was expected. The whole group, therefore, of so-called "antilithics" and "uric-acid solvents" based on the above theory is robbed of any scientific support. If uric acid is to be rendered more soluble in the blood, it must be, therefore, by the formation of some easily soluble combination with other organic atom-complexes, with production of substances which are not dissociable, i. e., are not "salts." Uric-acid and thymin acid (the phosphorus-containing residue of nucleinic acid) may combine in this way; the use of thymin acid (nucleotin-phosphoric acid) has been recommended in gout, but the pure substance is not yet commercially available for the purpose; the preparations on the market said to be pure contain in reality quantities of purin bases, and the increased excretion of uric acid following their administration may be due to the uric acid made by the body from the impure chemical itself. Indeed, some investigators doubt the existence of the substance called thymin-acid. Another substance with which uric acid forms a nonsaltlike compound is formaldehyd, and it has been shown that on giving hexamethylene tetramin[1] the formaldehyd split off from it in the body appears in the urine as easily soluble diformaldehyd-uric acid. Another combination called citarin (formaldehyd combined with citric acid) is said to act similarly. It is as yet doubtful whether such substances ever exert any beneficial effect in gout. In addition to the preparations named many others are on the market, some of them of known composition, others advertised with vague statements regarding their content.

On the whole, the best that can be hoped from drugs at present in gout appears to be the relief of pain by the various antineuralgic substances, such as the salicylic preparations, with which every one is now familiar. One drug deserves especial mention here, and that is colchicum. It has an enviable empirical reputation. It can be used as tincture or wine or as pure colchicin, the latter given in pill form, 1/100 grain (.001 gram) in each pill. In acute attacks one pill may be given every half-hour or hour until three or four have been taken.

The best treatment of gout—the mainstay of therapy in the disease—consists in a well-regulated regimen. The diet must be carefully chosen and rather spare, as a rule. It should consist of 100 to 120 grams albumin, 80 to 100 grams fat and 250 to 300 grams carbohydrates (Minkowski). The amount of animal food should be moderate, that of easily digestible vegetable food more liberal. Pastry, confections, sharp sauces, mayonnaise, mushrooms and all foods hard to digest are to be proscribed. Alcohol and coffee should be forbidden or used in minimal amounts. Very weak tea may be permitted, but waters (especially slightly alkaline mineral waters) form the best drink. Two hours or more of gentle exercise in the open air daily, where not contraindicated, should be enjoined. In acute attacks rest and local applications are necessary. For the tophi or chronic residues in the joints local phagocytic activity may be excited by means of hot applications and massage.

After all, it may turn out that disturbances of metabolism, of a nature unguessed as yet by us, may be more important in the pathogenesis of gout than the disturbances of uric-acid metabolism discussed in this review.

1. This substance is on the market under the names urotropin, cystogen, aminoform, formin, etc.

THE THYROID AND THE REPRODUCTIVE FUNCTIONS.

The most evident and best known functions of the thyroid are those connected with the processes of metabolism and with certain nervous phenomena, but it is also certain that the thyroid has a marked influence on sexual functions, particularly in the female. The swelling of the gland during menstruation, sexual activity and pregnancy, its relatively greater size and much more frequent disease in the female, are all evidence of this influence. Myxedematous patients are usually sexually inactive, and cretins generally fail to mature, although rare instances of pregnancy in cretins have been reported. As the thyroid does not normally functionate to any considerable extent before birth, the mother is called on to furnish thyroid secretion both for her offspring and for herself. Halsted observed that puppies whose mothers had been deprived of most of the thyroid before pregnancy had very much larger thyroids at birth than normal puppies, indicating an attempt at compensatory hypertrophy. Certain clinical observers have believed that the thyroid has an important relation to eclampsia, stating that in eclamptic women the hypertrophy of the gland which is normal during pregnancy is usually absent.

During his numerous experiments on the treatment of exophthalmic goiter with the serum and milk of thyroidectomized goats, which we recently discussed editorially,[1] Lanz[2] has had occasion to observe the effects of thyroidectomy on a large number of such animals. Goats, like all herbivora, seem to need the thyroid much less than does man or the carnivora, for they can live long without a trace of thyroid tissue, yet even in them the sexual and reproductive capacity is greatly decreased when the thyroid is missing. A large proportion of them show no sexual activities, many of the

1. THE JOURNAL A. M. A., Jan. 7, 1905, p. 41.
2. Beitr. zur klin. Chirurg., 1905, vol. xlv, p. 208.

others do not become pregnant, or else abort, and the number of offspring that can be obtained is small. Such offspring are very abnormal, being small, poorly-formed weaklings, seldom maturing sexually and showing many of the features of cretinism. It is well known that cretinism is particularly likely to occur in the children of women with diseased thyroids, and is hence most prevalent in the districts where goiter is endemic.

From these studies it may be deduced that the thyroid extract has a field of usefulness in certain conditions related to obstetrics and pediatrics other than frank cretinism and myxedema. In women with goiter who become pregnant, the advisability of cautious use of thyroid extract to supplement the function of the diseased organ during this period of increased demand is worthy of careful consideration. So, too, in the cases of children of either sex in whom maturation is unduly delayed, the possibility of deficient thyroid function exists, and offers a rational ground for thyroid medication, even when there may be no definite evidences of cretinism. Such treatment needs always to be undertaken with great caution and careful observation, for thyroid extract is by no means a simple and harmless agent—it must always be administered with a careful eye on physiologic conditions which it may profoundly modify.

SEROTHERAPY IN PNEUMONIA.

Since the unsuccessful attempt of Pane in 1898 but little has been accomplished in the line of specific serotherapy in lobar pneumonia. Later, however, our theoretical knowledge of the principles which underlie the production of sera antagonistic to bacteria of the pneumococcus class has greatly increased, thanks to Ehrlich and his coworkers. It is now generally believed that the spontaneous healing of pneumococcus infections is due to the production of bacterial antibodies rather than of antitoxins. In other words, a serum to be curative for pneumonia must possess bactericidal rather than antitoxic properties. There are many theoretical difficulties to overcome in the production of such a serum, if we assume that Ehrlich's views are correct. According to his theory specific immune bodies (amboceptors) combine on the one side with bacterial cells and on the other with complements produced by the body cells. Both amboceptors and complements are necessary to produce a bactericidal effect. Unfortunately, the complements are unstable bodies and can not be preserved in a serum, and consequently our antibactericidal sera contain only amboceptors. The complement must be supplied by the patient or introduced with fresh serum. To supply complements artificially is difficult, as the introduction of foreign complements may lead to the formation of anticomplements and defeat our aim. Practically, the action of the amboceptors depends on the complements remaining in the body of the patient, and as the disease may restrict complement formation the most powerful antiserum may be insufficient or useless. At present there is no known means of artificially stimulating the formation of complements. Furthermore, the bactericidal action of serum may be valueless even though plenty of amboceptors and complements be present. In order to work the two must combine, and this they will not do under all circumstances. The same organism injected into different animals produces different kinds of amboceptors, and these will combine with the complements of some species but not with those of others. The greater the number of amboceptors a given serum contains the greater the chance that they will combine with the complements of a given species. Then again, different varieties of a bacterial species vary in their combining power with different amboceptors. In the case of the pneumococcus, Roemer has attempted to obviate these difficulties by injecting different species of pneumococci into different kinds of animals and mixing the sera. In this way he has produced a serum which is polyvalent in a double sense.

Pässler[1] has recently reviewed the results which have been obtained with such a serum in the Leipzig clinic. His conclusions are based on a study of 24 cases and, making due allowance for the small number of cases, the results are certainly encouraging. Comparing the cases treated with Roemer's serum with those of the previous year, one is forced to conclude, making all allowance for the well-known variability of pneumonia epidemics, that something has been accomplished. The most marked improvement seems to occur in the general condition of the patients, severe cases taking on a milder course, and complications being rare. The duration of the disease seems to be appreciably shortened, the temperature is in many cases markedly reduced, and the tendency of the disease to spread to neighboring lobes seems to be less than is usual.

The method of action of the serum is not clear, though it gives the impression of being bactericidal rather than antitoxic. The number of pneumococci in the sputum is said to be unaffected, but in cases of pneumococcic septicemia those in the blood disappeared. An encouraging sign is the conservatism with which the author draws conclusions, and the reserve with which he advocates the use of the serum. It is not advocated as a specific and its use is advised only in severe cases and in patients whose resistance is lowered from alcoholism or intercurrent disease. One receives the impression that the outlook for a successful serum treatment of lobar pneumonia is a little more hopeful than it has been heretofore.

SAFEGUARDS FOR DUELISTS.

It has been facetiously declared that the greatest peril undergone in a French duel is that of catching cold. There are, however, possibilities of being scratched and consequently the introduction of pathogenic germs

1. Deutsches Archiv für klinische Medizin, vol. lxxxii, Nos. 3-4, 1905.

under the skin. We do not know the kind of weapons used, but we presume that they are like those described by Daudet in his "Immortals," with a nice little groove in the side for the blood to run down the blade. Hence, the greater chances for contamination. Of course, they would be disinfected, but this might not be altogether effectual. The persons of the combatants themselves may also furnish bacilli that only want to be introduced below the protecting cuticle. Certain of our French confrères, therefore, have devised still further protections. The combatants must take certain medicines over night, and on reaching the field of honor be soaped and scrubbed from head to foot, rubbed down with alcohol and sprayed with corrosive sublimate. Then, supplied with the necessary amount of sterilized clothing, the performance may begin. The real danger of catching cold, however, seems to have been somewhat neglected and it might be well to suggest that the participants be thoroughly examined by physicians as to the condition of their lungs. It has been shown by Fluegge and others that a consumptive by coughing or even speaking may project droplets containing tubercle bacilli a distance of several feet, and in even the moderate exercise of a French duel one should be protected also from this peril. With these and proper precautions against the inclemencies of the weather, it would seem that French duelists ought to be particularly favorable insurance risks. As a lay contemporary suggests, the action of the French physicians looks a little like a "fine bit of professional satire" on that traditionally safe transaction, the French duel.

INSANITY AND RELIGIOUS EMOTION.

A certain asylum superintendent is credited with the remarkable statement that there is no greater crime against the state than holding religious revivals; he considers religious enthusiasm as one of the chief causes if not the chief cause of insanity. It is odd that this discovery has not been made before by the many competent alienists who have studied the causation of insanity. Religious excitement, in common with other varieties of emotional stress, such as domestic troubles, business failures, political campaigns, etc., has been generally recognized as a cause of insanity, but only as a secondary one and usually only as an exciting cause in specially unstable subjects. In fact, the greatest extravagances in religious revivals and the highest expression of emotionalism in religion occur in the communities where actual insanity is comparatively infrequent. The negroes have always been especially subject to such exciting causes, but before they received their freedom, with its responsibilities and lack of compulsory moral restraint, insanity was a rare occurrence among them. Religious revivals, properly conducted and even if accented with some emotional excesses, are not specially conducive, according to the observation of most alienists, to serious or permanent mental disorder. There is far greater danger in this regard from a certain kind of morbid religiosity which is quite different from the noisy excitement of a revival and in this case also we must look back of the apparent cause to a pre-existing state of mental instability.

THE MENSTRUAL FEVER OF CONSUMPTIVES.

The great necessity in pulmonary tuberculosis is a means of early diagnosis. Perhaps we overlook the fact, in our hunt for specific diagnostic and curative means, that the clinician who makes the early diagnoses is the one who puts together the minor symptoms and signs, rather than the one who waits for striking and characteristic phenomena. It is well that we should note in this disease, as in others difficult of early diagnosis, those slight deviations from the physiologic which often occur and which are often overlooked. It has long been known that in women with outspoken pulmonary tuberculosis there is often a febrile crisis which can announce and accompany the menses. It is perhaps less well known that in very early cases fever may occur only at the menstrual period. The natural history of such cases has lately been exhaustively studied by Sabourin.[1] He shows that this fever is accompanied by an increase in the physical signs in the lungs, which probably accounts for the phenomenon. The observations of this author suggest that in all doubtful cases of tuberculosis in women it is well to examine the chest at the time of the menses, and they also suggest the necessity of greater care than usual at this period in the treatment of the disease.

THE PENNSYLVANIA OSTEOPATH BILL.

Governor Pennypacker of Pennsylvania has vetoed the bill passed by the legislature to legalize and to regulate the practice of osteopathy in that state. In his veto message he says that he has examined the bill carefully and can not obtain from its text or from the published statements of the founder of this so-called science a sufficiently definite idea of what it really is. Assuming that it has some scientific truth which is to be utilized by the osteopathic practitioners in the cure of disease and by them exclusively, he sees a certain injustice in the act. With what propriety can the legalized practitioners of medicine and surgery in Pennsylvania be prevented from using, and their patients from being benefited by, such acquisition? On the other hand, why should the osteopaths be prevented, as they voluntarily propose to be, from using whatever is beneficial to the sick in drugs or surgical operations? "If both drugs and surgery are useless," he says, "they may be rejected, but if they should at (any) time be found to be beneficial why should any science for the enforcement of a theory make the effort to exclude their use?" He says if this bill should become a law any physician who should attempt to practice what the osteopaths have discovered would be liable to punishment by imprisonment for ninety days. The whole idea of different schools of medicine, he remarks in a general way, is unscientific and every one engaged in the treatment of the sick should seek the truth wherever it may be found and utilize it. He calls the bill an "anomaly in our legislation" on the subject and therefore withholds his approval. In our columns this week, attention is called to another point by the president of the Pennsylvania Board of Medical Examiners, namely, that the osteo-

1. Revue de Medecine, vol. xxv, No. 3.

pathy bills which have been offered in certain of our legislatures, including that of Pennsylvania, contain clauses authorizing licensure on a diploma alone, provided it has been issued by a so-called reputable college of osteopathy. Such a provision completely emasculates all such laws so far as they claim to protect the public. The object is sufficiently clear. The diploma mills of the osteopath must have business and this must not be imperiled by even a so-called examination in physiology, anatomy, etc., by a board of osteopath examiners. The fact is that bills with this clause leave the whole matter as wide open as possible and it would be well to have the public and the profession, as well as the legislatures, informed as to the presence of this little card up the sleeve. "For ways that are dark and tricks that are vain," the various faddists, osteopaths included, are somewhat peculiar. A veto message like that of Governor Pennypacker will do much good and, further, it will help to hide a multitude of possible executive sins.

Medical News

ALABAMA.

Personal.—Dr Humphrey B. Thompson, Tuscumbia, has returned from Europe.——Dr. Willie F. Cobb, Barlow Bend, was brought to Camden for treatment, April 19, suffering from an accidental gunshot wound of the face.——Dr. Samuel C. Cowan, Union Springs, is ill with typhoid fever.

ARKANSAS.

Changes on Hot Springs Register.—The Secretary of the Interior has ordered the names of Drs. J. C. Parish and M. W. Purifoy stricken from the list of registered physicians of Hot Springs, and the addition to the list of Dr. J. W. Bush.

Memorial Hospital Appointments.—The following staff appointments have been made for the Logan H. Roots Memorial Hospital, Little Rock: Visiting surgeons—Drs. William C. Dunaway and Carle E. Bentley; visiting physicians—Drs. Frank L. French and Rezin W. Lindsey, and ophthalmologist, Dr. Charles C. Stephenson.

Prefer Sanitation to Salvation.—The authorities of Little Rock, threatened with an invasion by "Jeters Host," a band of negroes marching from Pine Bluff to show the inhabitants of the capital city the errors of their ways, were stopped by health officers, five miles from the city, vaccinated and not allowed to enter Little Rock.

The Smallpox Situation.—The conditions at the state penitentiary and at the state convict farm, Cummins, Lincoln County, have improved. The eight patients at the penitentiary are improving, and the one case and two suspects at the convict farm are quarantined, and the other convicts have been vaccinated.——Yellville has eight cases of smallpox.

Graduation.—The twenty-seventh class graduated from the Medical Department of the University of Arkansas, Little Rock, 32 in number, received diplomas April 12. Dr. Edwin Bentley, dean of the medical department, presided; President Henry S. Hartzog of the university delivered the annual address, and Dr. William C. Dunaway, Little Rock, the faculty address.

CALIFORNIA.

Afflicted with Diphtheria.—It is reported that there are 70 cases of diphtheria in and around Benicia and that the public schools have been closed on account of the disease.

Personal.—Dr. Thomas M. Hayden has been chosen health officer of Fresno.——Dr. Daniel E. Osborne, St. Helena, has been elected president, and Dr. Edwin Z. Hennessey, secretary and treasurer of the Napa County Board of Health.

Licensed to Practice.—Dr. C. La Verna Carvin, Oakland, who was arrested a year ago at the instance of the Board of Medical Examiners, on the charge of practicing medicine without a license, was acquitted, passed the examination and has now been granted a license to practice.

Fabiola Hospital Receives Legacy.—The bequest of the late Mrs. Theresa L. Merchant, Oakland, for the benefit of the Oakland Red Cross Society or some soldiers' hospital managed by the society, which now amounts to $3,100, has been paid over to Fabiola Hospital on its promise to keep and maintain a room for the care of soldiers.

Health Officers Meet.—At the annual meeting of the California Public Health Association in Riverside, April 17, Dr. Edward von Adelung, health officer of Oakland, was elected president; Dr. William Simpson, health officer of San Jose, vice-president, and Dr. Newel K. Foster, Sacramento, secretary of the State Board of Health, was re-elected secretary-treasurer.

ILLINOIS.

Blessing Hospital Staff.—At the annual meeting of the medical staff of Blessing Hospital, Quincy, Dr. Edmund B. Montgomery was elected president and Dr. Ernest Zimmermann, secretary.

Personal.—Dr. Karl F. Snyder has returned to Freeport, after an operation for ulcer of the duodenum, much improved in health.——Dr. Frank Anthony, Sterling, has been re-elected a member of the council of the United Spanish War Veterans' Association.

Bills Not Passed.—The general assembly adjourned *sine die*, May 6, leaving unpassed the six osteopathic and two optometry bills, and one anti-vivisection bill introduced since February 1.——House bill 495, providing that physicians attending court as expert witnesses shall be entitled to receive a sum of $10 for each day's attendance, failed to become a law. This bill was not supported by the medical profession.——House bill 577, giving the State Board of Health sanitary supervision over the lodging houses in Chicago, also failed of passage. The jurisdiction of the board in these lodging houses is now limited to cubic-air space.

Defeat of Osteopathic Bill.—The committee on judiciary of the house of representatives gave a hearing on Senate Bill No. 311 May 4. The physicians present at the hearing were Drs. William A. Evans, Robert B. Preble, and George W. Webster, Chicago; William K. Newcomb and Charles B. Johnson, Champaign; Munroe G. Reynolds, Aledo, and James A. Egan, Springfield, secretary of the State Board of Health.——Drs. Evans and Webster spoke against the passage of the bill. The committee, by a close vote, ordered that the bill be sent out with the recommendation that it be not passed. On the following day the bill was tabled in the house of representatives.

Bills Passed.—The following is a synopsis of bills of especial interest to the members of the medical profession, passed by the house and senate of the 44th general assembly: House 119, prohibiting the embalming or preparing for transportation of dead bodies except by persons licensed by the State Board of Health, and providing for examination and license; House 121, placing the employes of state charitable institutions under civil service; House 182, empowering overseers of poor to provide treatment for patients afflicted with rabies, under the direction of the State Board of Health, appropriating $2,000; House 330, providing for the location, erection and maintenance of a state sanatorium for consumptives, appropriating $25,000; House 414, providing for the sale and free distribution of diphtheria antitoxin under the direction of the State Board of Health; Senate 158, placing physicians and nurses of the Cook County Hospital under civil service; Senate 225, establishing a state board of examiners for nurses, and providing for examination and license; Senate 226, creating a state board of dental examiners and providing for the regulation of the practice of dentistry.

Chicago.

A Healthy April.—Notwithstanding the excess of mortality among children under five years of age the completed returns of deaths for the month show April to have been one of the most healthful Aprils on record. The annual rate, 1,398 per 1,000 of population, is only 0.12 higher than that of April, 1897—the lowest in the 63 years from 1843-1904, inclusive. The total number of deaths was 2,287, of which pneumonia caused 330, and consumption 315.

Last Week's Deaths.—Despite an unusual number of deaths reported from violence——11 from suicide and 40 from other forms—the total mortality is but 3 more than that for the previous week. Pneumonia temporarily again assumed the lead, with 85 deaths, while consumption fell from 83 of the week before to 74. No marked changes among other important causes of death are noted, and the generally satisfactory conditions of the previous month continued, except, of course, as to measles and whooping cough. The under-5-year deaths are 21 fewer than during the previous week.

Will Make Serums.—It is announced that the Memorial Institute for Infectious Diseases of Chicago has established a serum division as a branch of its scientific and experimental work. This division will undertake the preparation of various curative and protective sera and will also prosecute investigation into some of the problems of immunity and serumtherapy. In connection with this work it is expected that a limited amount of diphtheria antitoxin will be available for distribution at cost. Professor Edwin O. Jordan, of the University of Chicago, has been placed in charge of the serum division, and preparations for the new work are now well under way.

MARYLAND.

Acquitted.—The second trial of Dr. Joseph C. Ohlendorff, charged with causing the death of Margaret Hale by malpractice at the Beltsville Sanitarium, Upper Marlboro, was concluded, April 28, by a verdict of acquittal. On the first trial he was found guilty of manslaughter.

Personal.—Dr. Charles A. Wells has been elected mayor of Hyattsville for the fourth successive term.——At a meeting of the sanitary officers of Baltimore County, May 3, Dr. James F. H. Gorsuch, Fork, the president, resigned, and Dr. Charles L. Mattfeldt, Catonsville, was chosen in his place.

Baltimore.

No Money for Hospital.—All hope of an infectious diseases hospital has vanished for this year, it being discovered that there is no money available for the purpose.

Interne Examinations.—The examination for the selection of six internes for St. Joseph's Hospital was held, April 25. Of 28 men who had applied for permission to enter the competition, 18 reported, but two withdrew after two questions, which were rather hard, had been read.

Personal.—Dr. George A. Hartman has recently been appointed one of the visiting physicians to St. Joseph's Hospital. ——Dr. Elizabeth Hurdon sailed for England April 29.——Dr. José L. Hirsh has been appointed pathologist to the Hospital for the Women of Maryland.——Dr. George L. Wilkins has returned from a five weeks' trip to Europe.

Commencements.—Baltimore University School of Medicine graduated a class of 16, May 2. Rev. Harris E. Kirk was the orator of the occasion.——Maryland Medical College, Baltimore held its annual commencement exercises May 5. Dr. Harry C. Gross awarded diplomas to 91 graduates. Albert C. Tolson delivered the address of the evening.

MASSACHUSETTS.

Waltham Hospital Completed.—The new contagious disease hospital, erected at a cost of $25,000 at Waltham, is now completed and ready to receive patients.

State Association of City Physicians.—City Physician Edwin P. Gleason, Brockton, has written to 32 city physicians throughout the state, suggesting the organization of a state association for the interchange of ideas and suggestions regarding problems of civic sanitation.

Excessive Verdict Reduced.—The verdict for $1,000 returned in favor of Louis Bromberg against Drs. Herbert B. Howard and Elisha Flagg, Boston, for an autopsy alleged to have been made on the body of the plaintiff's son, without the plaintiff's consent, has been reduced to $300.

Personal.—Dr. William A. Dunn, Boston, has become a member of the medical staff at the Vatican.——Dr. George L. West, Newton Center, has been appointed medical examiner for the seventh Middlesex district, vice Dr. Julian A. Mead, Watertown.——Dr. Charles A. Peabody, Worcester, who was sentenced to three years' imprisonment for embezzlement in 1902, has been pardoned.

Consumptive Hospital Bill a Law.—The Massachusetts legislature has passed a bill authorizing the establishment of a hospital for consumptives, to be built at an expense of $150,000, not far from Boston.——They have also authorized the city of Boston to borrow outside the debt limit in order to establish a relief station in East Boston, similar to the one which is so successful in Haymarket Square, and the city council has voted to proceed at once with its establishment.

Find Farms Foul.—After an eight weeks' tour of the dairy farms of Massachusetts the State Board of Health found over 60 per cent. in such an insanitary condition as to require immediate improvement. Unless such changes are promptly made the farmers will be forbidden to sell their milk. This is a continuation of the work started two or three years ago by the Boston Board of Health to secure pure milk for the city. The inspectors have also detected 30 tuberculous cows, which is of importance, since just now the farmers are urging the abolition of the tuberculin test, which they claim is unnecessary.

MISSOURI.

Tuberculosis Sanatorium Bill Passed.—The general assembly has passed a bill providing for a state sanatorium for incipient consumptives and has appropriated $50,000 for its establishment and maintenance.

Public Comfort Houses.—A movement is on foot in the St. Louis Medical Society to co-operate with the Civic Improvement League to establish houses for public comfort about the city, such as exist in European cities.

Bringing Them In.—The St. Louis Medical Society recently appointed a committee to canvass the medical profession of the city for the purpose of increasing the membership of the local body by urging all eligible members of the profession to join.

Must Report Tuberculosis.—An ordinance declaring consumption to be communicable and prescribing regulations to control the spread of the disease was passed, April 28, by the municipal assembly of St. Louis. This requires each case of tuberculosis to be reported to the Board of Health.

Commencements.—The graduating exercises of the Medical Department of St. Louis University were held May 8. Dean John M. Dodson of the University of Chicago delivered the commencement address.——Barnes University, St. Louis, on May 3, graduated a class of 123 in the medical department.

Addition to Hospital.—The building formerly occupied by the Missouri Medical College on Jefferson Avenue, St. Louis, has been remodelled and equipped throughout as an annex to the old Polyclinic Hospital, the two now constituting what will be known in the future as the Washington University Hospital.

Do Not Want Advertisement.—The Moberly Medical Society, at a recent meeting, passed a resolution requesting local newspapers to make no mention of physicians' names in connection with newspaper accounts of births, accidents, surgical operations, etc. A resolution was also adopted asking every member of the society to attend all society meetings and inviting the co-operation and membership of all physicians in Moberly.

Annual Meeting.—The annual meeting of the St. Louis Medical Library Association was held, April 26, when the following officers were elected: President, Dr. Norman B. Carson; vice-president, Dr. John H. Duncan; librarian, Dr. Frank J. Lutz; secretary, Dr. Walter B. Dorsett; treasurer, Dr. Paul Y. Tupper, and trustees: Drs. Edwin C. Burnett, Hugo Ehrenfest, Washington, E. Fischel, Robert M. Funkhouser, Joseph Grindon, and Harvey E. Mudd.

Banquet to Medical Legislators.—The St. Louis Medical Society of Missouri and the Medical Society of City Hospital Alumni, St. Louis, gave a complimentary banquet to the medical members of the forty-third general assembly of Missouri, in recognition of services to the public and profession in securing legislation for the establishment of a state sanatorium for persons having incipient tuberculosis, at Hotel Jefferson, May 10. The guests of honor were the governor, the president of the senate and the speaker of the house; Senator Dr. Frank De Vilbiss, Spring Garden; Representatives Drs. William L. Gillmore, Winona, Christopher D. Kelly, Barry County, Abra C. Pettijohn, Brookfield, Irvine Phillips, Lead Mine; Horace D. Quigg, Blackwater, James Stewart, Warren County, Alonzo Tubbs, Gasconade County, and Goldburn H. Wilson, St. Louis; the Surgeon General of the United States Public Health and Marine Hospital Service; the presidents of the Missouri State Medical Association; Missouri Institute of Homeopathy and Eclectic Medical Society of Missouri; the editor of THE JOURNAL of the American Medical Association, and the president of the State Board of Health of Missouri.

NEW YORK.

Fair for Hospital.—The fair for the benefit of Jamaica Hospital which closed April 28, netted $1,300 to the hospital organization.

Buffalo Graduates.—The fifty-ninth annual commencement exercises of the Medical Department of the University of Buffalo were held May 4, when a class of 37 was graduated. The address to the graduating class was given by Rev. Richard Earle Locke.

Personal.—Governor Higgins has appointed Dr. Eugene H. Porter, New York City, as the State Commissioner of Health to succeed Dr. Daniel Lewis.——Governor Higgins has re-appointed Dr. Stephen Smith, New York City, to the State Board

of Charities.——Dr. George S. LaMoree, Highland, was thrown from his buggy, April 24, and sustained painful injuries.——Dr. John H. Pratt has been appointed health physician of Manchester.

Buffalo Alumni Meet.—The thirtieth annual meeting of the Alumni Association of the Medical Department University of Buffalo was held May 3 and 4. The entertainment provided included clinics in the various hospitals; a luncheon given by the resident to the non-resident alumni; a luncheon given by Drs. Matthew D. Mann, Roswell Park, Charles G. Stockton, Charles Cary, Irving M. Snow, Herbert W. Williams and De Lancey Rochester, to the association; a smoker given by the faculty, and the annual dinner at the Iroquois Hotel. The following officers were elected: Dr. Fridolin Thomas, Buffalo, president; Drs. William R. Campbell, Niagara Falls, Malin B. Shaw, Eden Center, Mary M. Huntley, Buffalo, George A. Himmelsbach, Buffalo, and Hiram P. Trull, Williamsville, vice-presidents; Dr. Herman K. DeGroat, Buffalo, treasurer, and Dr. Nelson G. Russell, Buffalo, secretary.

Final Work of Legislature.—The McMannis bill establishing a hospital in New York City for the treatment of habitual drunkards and persons addicted to the use of opiates, drugs or narcotics, passed the senate.——The Hackett bill authorizing the establishment of a new public hospital in New York City, to be located on the west side between Twentieth and Forty-second streets, has passed the assembly. The bill provides that the institution shall be under the control of the Commissioner of Public Charities. There is some objection to this, as it has been found that the hospitals of New York have been better managed by a special board of trustees. It is thought that the new hospital should be established under the same control as other city hospitals.——A bill has been passed increasing the pay of police surgeons in New York City from $3,000 to $3,500.——Two additional bills affecting the water supply have been passed; one of these, the Agnew bill, provides for the appointment by the governor of five citizens of the state to constitute the State Water Supply Commission; the other, known as the Mayor's bill, provides for the appointment of three commissioners to constitute a local water board for the City of New York. The bill defines the duties, regulates the salaries, etc. It is understood that these bills will be approved immediately and that plans will be submitted for the acquiring of additional sources of water supply for the City of New York at the earliest possible date.——The Hill bill abolishing the office of curator of the Medical Department of the University of Buffalo, and vesting his powers in the faculty of the institution, was passed by the assembly May 1.

New York City.

Impure Milk Dealers Sentenced.—Five milk dealers were convicted in Court of Special Sessions of selling impure milk. The heaviest fine levied was $100.

Personal.—Dr. Frank A. McGuire was the guest of honor at the fourteenth annual banquet of the New York Celtic Medical Society, April 27, and was presented with a gold badge in the form of a harp.

Many Would Go to Portland.—Thus far 180 applications have been received for reservation on the special train from New York City for Portland, on which accommodation for only 125 was originally provided.

A New Ambulance.—The Health Department has acquired a thirty horse-power electric ambulance, geared to travel twenty-five miles an hour, at a cost of $4,000. It will be used exclusively for contagious diseases in the Borough of Queens, where long distances must frequently be traversed.

Contagious Diseases.—There were reported to the sanitary bureau for the week ended April 29, 356 cases of measles, with 16 deaths; 314 cases of tuberculosis, with 189 deaths; 294 cases of diphtheria, with 42 deaths; 212 cases of scarlet fever, with 12 deaths; 111 cases of cerebrospinal meningitis, with 104 deaths; 15 cases of typhoid fever, with 7 deaths; and 61 cases of varicella.

A Ward for Meningitis.—A pavilion for the treatment of cerebrospinal meningitis patients under the age of twelve has been set aside at Bellevue Hospital. There are now 45 cases suffering from this disease at Bellevue Hospital. This ward will relieve, in a measure, the overcrowding of the city hospitals, and will enable the investigating committee to study the disease to better advantage.

Cerebrospinal Meningitis Commission.—At the conclusion of the meeting of this commission May 5, it was announced that it had been concluded that the best treatment for the disease was fresh air. Sunlight should also be freely admitted to the sick room. It was also announced that no benefit had been derived from the injection of any serum or antitoxin. Further experiments, however, will be made along this line.

Pneumonia Commission.—After having worked steadily for nearly six months this commission held its first general session on May 4, when reports were received from the various committees. A large quantity of material has been collected and will be published in the form of monographs by the individual members of the commission. The work will be continued, and a more definite report will be made in a few months on the causes, methods of treatment and means of prevention of this disease.

PENNSYLVANIA.

Osteopathic Bill Vetoed.—The governor's veto of the osteopath bill is discussed elsewhere in this issue.

Hospital Examinations.—An examination for two internships in St. Vincent's Hospital, Erie, will be held in the hospital after June 10. All applications should be sent to Dr. J. H. Montgomery, Erie, or to Dr. C. M. Montgomery, Philadelphia.

Personal.—Dr. James W. Macfarlane has been re-elected secretary of the West Penn Hospital, Pittsburg.——Dr. Franklin J. Evans has been appointed inspecting physician of the Chester Board of Health.——Dr. Thomas M. Livingston has been re-elected president of the Columbia Board of Health.——Dr. George Hay, Johnstown, who was recently operated on for appendicitis, is making a rapid recovery.

Hospital Notes.—Andrew Carnegie has agreed to endow two private rooms in the Columbia Hospital, Wilkinsburg, at an expense of $16,000. They will be named in honor of Mrs. Carnegie and Miss Marguerite Carnegie.——Bloomsburg Hospital will henceforth be known as the Joseph Ratti Hospital in honor of its founder and donor.——The courts have decided that bequests of $10,000 each to the Washington Hospital and the Presbyterian Hospital, Allegheny, by the late Mary Gregg of Washington, are invalid because the bequests were made within thirty days of the death of the testator.

Philadelphia.

Visitors from Abroad.—Dr. Gunnar Nystron, Upsala, Sweden, and Dr. Hall of London, England, visited the medical colleges and hospitals of the city during the first week of May.

Members of American Therapeutic Society Entertained.—Dr. John V. Shoemaker entertained at luncheon at his home on May 5 an assemblage of members of the American Therapeutic Society.

Bequests.—By the will of the late Mrs. Clement B. Newbold the Home of the Merciful Saviour for Crippled Children receives $5,000 and the maternity department of the University Hospital $10,000.

Hospital Physicians Organize.—At a meeting of the physicians of the Samaritan Hospital, held at the residence of Dr. Wilmer Krusen, May 6, a permanent society of the staff was effected, and the following officers were elected: President, Dr. Samuel Wolfe; vice-president, Dr. Henry C. Groff, and secretary, Dr. O. J. Arnold.

Internes for St. Joseph.—The following men were appointed resident internes in St. Joseph's Hospital, May 1: Dr. A. H. Harrigan, Columbia University; Dr. James G. Cullen, University of Pennsylvania, of Dunmore, Pa.; Dr. Thomas O'Brien, University of Pennsylvania, of Philadelphia; Dr. E. B. Starr, Jefferson Medical College, of Springfield, Ohio, and Dr. Rice R. Jackson, Jefferson Medical College, of Texas.

Hospital Reports.—During April 262 patients were admitted to the German Hospital; 255 were discharged cured and 186 remained; 4,200 patients were treated in the dispensaries and 1,429 prescriptions were issued.——The Charity Hospital treated 882 patients and compounded 785 prescriptions.——During 1904 the Pennsylvania Hospital treated a patient every twenty minutes, day and night. Altogether 44,138 patients were treated, and the ambulance made 1,565 calls.

Health Report.—The total number of deaths reported for the week ended May 6 reached 481, as compared with 552 for the previous week and 572 for the corresponding period of last year. The principal causes of death were as follows: Typhoid fever, 20; diphtheria, 8; consumption, 49; cancer, 22; apoplexy, 17; heart disease, 45; acute pulmonary disease, 74; enteritis, 23, and Bright's disease, 41. There were 342 cases of contagious disease reported, with 32 deaths, as compared with 380 cases and 24 deaths for the previous week. A slight decrease in typhoid fever is noted.

Gift to Dr. Forbes.—The students of the classes of 1905, 1906, 1907 and 1908 of Jefferson Medical College will, on com-

mencement day, June 2, present to Dr. Forbes, the professor of anatomy, a life-size portrait of himself. The gift is a testimonial to Dr. Forbes for his indefatigable efforts toward legalizing dissection in this commonwealth, for it was by his efforts that this law was passed and the State Anatomical Board established. Dr. Forbes completed his twenty-sixth year as professor of anatomy in the college this year, while he has taught anatomy in this city for 49 years.

SOUTH DAKOTA.

Special Train to State Meeting.—The twenty-fourth annual session of the South Dakota State Medical Association will be held at Deadwood, S. D., July 5 and 6. This is the first time that the meeting has been held west of the Missouri River, and the date makes it possible to go on to Portland in time for the American Medical Association session the next week, so that a very instructive and pleasant outing is made possible. Special through sleepers will leave Aberdeen on the morning of July 3, and will pass south through the eastern part of the state to Sioux City, Iowa, where a special train will be formed, to run over the C. and N. W. R. R. to Deadwood, arriving at 12:20 p. m. July 4. July 7 will be occupied in a trip up the Spearfish Canyon and in seeing the sights of the Black Hills, until 6 p. m., when the train will leave for Cheyenne and will complete the journey via the U. P. and Oregon Shortline, arriving at Portland at 5:25 p. m. Monday, July 10. Physicians from other states who desire to visit the wonderful Black Hills will be very welcome at the meeting, announces the secretary, Dr. Charles B. Mallery, Aberdeen, and can join the party at Sioux City. The fare, including the side trip to Deadwood is $50.65, the return routes are the same as given in THE JOURNAL, April 22, 1905.

GENERAL.

More Yellow Fever at Panama.—Two natives died of yellow fever on the isthmus, April 28 and 29, and three employes of the commission were reported sick. Bad weather and scarcity of water make conditions abnormally bad. The new water supply will soon be in operation.

Tuberculosis Association Meeting.—A rate of one fare and a third on the certificate plan has been granted by many railroads for the first annual meeting of the National Association for the Study and Prevention of Tuberculosis, to be held at the New Willard Hotel, Washington, D. C., May 18 and 19, 1905.

The Department of Sanitation at the Isthmus of Panama.—The Isthmian Canal Commission, at its meeting held in Washington, May 3, 1905, approved the estimates which were submitted by Col. W. C. Gorgas, Medical Corps, U. S. A., chief sanitary officer on the isthmus, and which were favorably recommended by Commissioner Magoon in charge of government and sanitation. These estimates provided for the allotment of $656,444 for the fiscal year beginning July 1, 1905, for the payment of salaries and wages in the health department, including professional employes and skilled and unskilled labor, which is a net increase of $150,140 over the allotments for the preceding year, which increase is based on the proposition that the forces of the commission will be largely augmented by July 1. This allotment for the coming fiscal year does not include the cost of construction of necessary buildings and hospitals or for the purchase of medical supplies and other necessary equipments, but is merely for the payment of the professional corps and the large number of laborers engaged in work looking to the sanitation of the isthmus. As the expansion of force involves increase of duty and responsibility on the heads of the several offices and institutions included within the department of health, the commission authorized approximately a 15 per cent. increase in the salaries of the heads of the departments and fixed them as follows:

Chief sanitary officer	$10,000
Director of hospitals	8,000
Chief quarantine officer	7,000
Superintendent of Ancon Hospital	7,000
Superintendent of Colon Hospital	5,000
Health officer of the Panama health office	3,600
Health officer of the Colon health office	3,000
Resident physicians of emergency hospitals along the line of the canal	3,000
Chief sanitary inspector	3,600

The commission also authorized the immediate erection of an additional hospital building in Colon at the estimated cost of $40,000.

The Osler Farewell Dinner.—The dinner given to Dr. William Osler previous to his departure for England to assume the regius professorship of medicine in the University of Oxford, took place at the Waldorf-Astoria, in New York City, May 2. There were present over 500 physicians from various parts of the United States and Canada, the larger number naturally coming from the large cities on the Atlantic seaboard. Dr. James Tyson of Philadelphia presided. In the middle of the dinner Mrs. Osler and other members of the Osler family took seats in the center of the first balcony facing the guest table. Their appearance was signaled by general applause, the diners rising and waving their napkins. By the time the tables were cleared and the cigars lit the two balconies surrounding the dining hall were filled with visitors, mostly ladies, so that the speakers faced an attractive gathering. The first speaker was Dr. F. J. Shepherd of Montreal, who spoke about Dr. Osler's career in Montreal as "Student and Teacher" in the early seventies. He was followed by Dr. J. C. Wilson of Philadelphia, who spoke about Dr. Osler in Philadelphia and his work there as "Teacher and Clinician." Dr. Wm. H. Welch of the Johns Hopkins University then spoke of Dr. Osler's work in Baltimore as "Teacher and Consultant." Dr. Welch referred to the difficulty of forming a correct estimate of the lasting significance of work of contemporaries; he believed, however, that Osler's efforts to place the teaching of clinical medicine in this country on a sound basis would prove to have lasting influence. "Our Regius Prof.," to the tune of "America," was sung by the whole company. The venerable Dr. A. Jacobi spoke of Dr. Osler as "Author and Physician." Then Dr. S. Weir Mitchell presented Dr. Osler with a copy of an English translation of Cicero's "de Senectute," printed in Philadelphia by Benjamin Franklin. Dr. Mitchell's remarks were most happy. He accused Cicero of being an "anticipatory plagiarist" because he wrote that it behooves a man to know when it is best for him to die. Dr. Osler's response was brief, but forceful and largely in the nature of expressions of thankfulness to colleagues, students, and the profession at large for all he had received at their hands. He took occasion to emphasize very particularly the need in this country to abolish our many-headed hospital staffs and to establish everywhere good services, medical and surgical, under the permanent charge of individual physicians and surgeons, with adequate assistants and laboratories. Only by so doing can America hope to contribute its share to the solution of the many problems now pressing in clinical medicine.

CANADA.

Personal.—Dr. W. D. Brydone-Jack, Vancouver, is visiting New York hospitals.——Dr. Glen Campbell, Vancouver, has returned from Germany.——Dr. W. H. B. Aikins, Toronto, has returned from Vienna.——Dr. Perry Goldsmith, Belleville, Ont., has gone to Vienna.

Toronto Clinical Society.—At the last meeting of the season, May 3, this society elected the following officers: President, Dr. Adam H. Wright; vice-president, Dr. H. B. Anderson; recording secretary, Dr. George Elliott; corresponding secretary, Dr. W. J. McCollum; treasurer, Dr. Geoffrey Boyd; executive committee, Drs. E. E. King, W. B. Thistle, D. J. Gibb-Wishart, R. I. Dwyer and H. J. Hamilton. The annual banquet was held at the Albany Club May 6.

Western Hospital, Montreal.—Work will be begun, June 1, on a fine new wing to the Montreal General Hospital, which will cost $200,000. The following medical board has been appointed to co-operate with the architects: Dr. J. B. McConnell, Dr. James Perrigo and Dr. George Fisk. The new wing, when completed, will provide for 100 extra beds for this hospital. The addition is necessitated owing to the constant crowded condition of the institution, as many as ten patients being often refused admittance in a day.

FOREIGN.

French Congress of Climatology and Urban Hygiene.—The second French congress was held at Arcachon and Pau, April 24 to 29, with a large attendance. Part of the sessions were held at one place and part at the other, a special train conveying the members, and also giving them a day or so at Biarritz. Dr. H. Barbier delivered the report on the seaside sanatoria for children and adults in France, and Arnozan demonstrated the model disinfecting and drainage service at Arcachon.

Fifth International Congress of Psychology at Rome.—There were four sections in this congress which convened at Rome, April 26 to 30. The sections were as follows: Experimental psychology; introspective psychology; pathologic psychology; and criminal, pedagogic, and social psychology. Professor Sergi presided over the general congress, Lombroso had charge of the fourth section and Tano, Ardigo and Morselli of the others.

Epidemic Cerebrospinal Meningitis in Austria and Germany.—The Austrian government has sent three physicians, including A. Ghon, Weichselbaum's assistant, to study the epidemic of meningitis that is spreading into the Austrian territory from Prussian Silesia. In February and March 437 cases and 188 deaths were reported in Galicia. Several cases have appeared in Berlin, and Westenhoeffer has been sent to Silesia to study the disease. Two cases had developed in Vienna by April 23.

Homage to Beco.—Dr. Beco is one of the most public-spirited and energetic physicians of Belgium. He has long served as secretary general of the public health department. About sixty physicians gathered to do him honor on a recent anniversary, and asked his "personal co-operation" in the making of a marble portrait bust to be installed in a prominent place. Beco's name is always associated with every forward stride of the organized profession in Belgium, and with medical progress in general.

Hygiene of Laundries in France.—The French authorities have recently regulated the conveyance and sorting of soiled linen in the laundries. It has been found that 25 per cent. of the laundry employes in France are tuberculous, and measures have been taken to reduce the danger of contagion from soiled linen. It must be carried in closed bags or boxes and, before it is sorted, it must be disinfected or boiled in an alkaline fluid, or at least, well moistened to prevent dissemination of dust as it is sorted. The bags and linen from hospitals, etc., must be disinfected. All who handle the soiled linen must be supplied by the proprietor with overalls or aprons, and there must be no lunching in the room devoted to this purpose. The soiled linen before disinfection or moistening must never be taken into the ironing room. An exchange remarks that these measures should be supplemented by hygiene in the home, while the soiled linen is waiting for the laundryman. Instead of being kept in a dark, covered, unventilated basket or bag, it commends Cazalis' plan of having a place for the soiled linen on the outside of the wall of the house, built from the landing at the head of the stairs, the door opening into the house.

The International Roentgen Congress and Celebration.—The congress opened, April 30, in a blaze of enthusiasm and closed May 3, a most remarkable event, as it celebrated only the tenth anniversary of the discovery of the Roentgen rays. Professor Roentgen, himself, was too modest to face the ovation all wished to offer him, and stayed at home in Würzburg, merely telegraphing his appreciation of the honor. From every country tributes to the therapeutic efficacy and the value in diagnosis of the rays were presented, Lassar stating that he had had only 3 failures out of the hundreds of cases of cancer he had submitted to the rays. (His experiences to date were summarized in THE JOURNAL on page 79). He recognizes the limitations of the treatment, stating that one-fifth of an inch is the extent of its effectual therapeutic penetrating power. Similarly favorable results were reported from Lisbon by Comas. Unger of Berlin and Sjoegren of Stockholm knew of no case of cure of mammary cancer, but Wohlgemuth has witnessed the vanishing of a cancer of the breast in a woman of 75 after seventy-two exposures, three a week. Our German exchanges have all blossomed out with articles on roentgology, delivered at the congress, describing its importance for surgery, for internal medicine, etc. Rumpf defined the present status of Roentgen treatment of leukemia as promising marked improvement, but not a permanent cure. No instance of the latter is yet known. The benefit to the general health and the blood findings are explained by Heineke's and Perthes' researches on the deleterious action of the Roentgen rays on lymphoid tissue and on ascaris eggs. Fittig has successfully treated lymphoma of the neck and symmetrical parotitis. Rumpf mentioned in speaking of the differential value of the rays that he has recently had a case in which a splinter of bone had lodged in the left bronchus and caused a small inoperable abscess. Two weeks in the abdominal decubitus with the head low was followed by the spontaneous evacuation of the abscess, and with the pus the piece of bone. Among the innumerable technical improvements exhibited was an alarm clock contrivance that rang a bell when the rays reached the burning point. This was presented by Gocht of Halle. The address made by Leonard of Philadelphia, president of the American Roentgen Society, will be reviewed elsewhere.

LONDON LETTER.

The Care of the Consumptive Poor of London.

The difficulty of providing sanatorium treatment for the consumptive poor of London has been the subject of much consideration and discussion. A deputation organized by the Incorporated Society of Medical Officers of Health has urged the Metropolitan Asylums Board (the authority which controls the fever hospitals of the metropolis) to provide sanatoriums. In the deputation were represented the National Association for the Prevention of Consumption and Other Forms of Tuberculosis, the Royal College of Surgeons, the Royal Sanitary Institute, the National Health Society, the Hospital Saturday Fund Association, the Hospital Sunday Fund Association, and the Charity Organization Society. It was pointed out that over 7,000 persons (the large majority in the prime of life) die every year in London from pulmonary phthisis. This loss, as well as a large amount of illness from the same disease, might be prevented were hospitals provided. The present provision of hospitals is totally inadequate and it is impossible to treat the poor in their own homes or in poor law infirmaries with any reasonable hope of cure. Sir William Broadbent, who spoke as the representative of the National Association for the Prevention of Consumption, said that there were over 40,000 persons suffering from consumption in London, of whom over 7,000 were in the earlier stages and could be successfully dealt with by sanatorium treatment. He hoped the board would not be satisfied with simply getting itself constituted the sanatorium authority for London, but would become the authority for dealing with tuberculosis as a whole so that, step by step, this great question might be dealt with from both the preventive and the curative aspects. The initial expense need not be heavy. There is no need for palatial buildings. Sanatoriums may be started with a number of light buildings, bungalows and huts. The children suffering from surgical tuberculosis should not be forgotten. In London thousands of children are being made cripples by tuberculosis of the spine and joints. No class of disease yields more readily to treatment than this.

New President of the Royal College of Physicians.

At the election of the Royal College of Physicians, held to select a successor to Sir William Church, who had held the office of president for the unusually long period of 6 years, the first ballot resulted as follows: Sir Richard Douglas Powell, 51 votes; Sir William Broadbent, 50; Dr. Pye Smith, 27; scattering, 7. The second ballot resulted in the election of Sir Douglas Powell, who received 74 votes, against 59 for Sir William Broadbent. The new president was physician in ordinary to the late queen.

Cerebrospinal Fever in England.

In view of the outbreak of cerebrospinal fever in New York, the occurrence of some sporadic cases in England is of interest. A man, aged 36, has been admitted into one of the London hospitals under the care of Dr. Ferrier. The usual symptoms of meningitis developed and in the fluid obtained by lumbar puncture were found diplococci which, on cultivation, proved to be those of Weichselbaum. Subsequently a fatal case occurred at Liverpool, which has attracted much attention in the lay press for the following reasons: The patient was involved in a quarrel a month before his death, and a suggestion was raised that his illness was due to injury. Accordingly a coroner's inquest was held. Though the *Diplococcus intracellularis* was found in the cerebrospinal fluid, the doctor who had attended the patient previously to his admission to the hospital maintained that the cause of death was abscess of the brain. However, the necropsy negatived this, for pus was nowhere found at a distance from the meninges.

Prizes of the Royal College of Surgeons.

The Jacksonian prize essay for 1904 has been awarded to Mr. H. J. Patterson for his essay on "The Diagnosis and Treatment of Such Affections of the Stomach as Are Amenable to Direct Surgical Interference." The following subject has been selected as the subject for the Jacksonian prize for 1906: "The Diagnosis and Treatment of Those Diseases and Morbid Growths of Vertebral Column and Spinal Cord and Canal Which Are Amenable to Surgical Operations."

Another Victory Over Malaria.

More than a year ago Dr. Ronald Ross reported the remarkable success against malaria achieved by the Suez Canal Company, an account of which was published in THE JOURNAL. He now reports an equally brilliant victory obtained in the British possessions at Klang and Port Swettenham, in the Malay States. Full details have been given by Dr. Malcolm Watson, district surgeon, in the *Journal of Tropical Medicine*. Klang is a town with a population of 3 576 in 1901. Port Swettenham is 5 miles distant, on the mouth of the Klang River, and has a population of about 700, mostly official. In the year 1900 both places were hotbeds of malaria. Dr. Watson doubts

whether more than 3 out of 293 houses in Klang escaped infection during the last 4 months of that year. Port Swettenham was opened in September, 1902, and within 2 months 41 out of 49 government quarters became infected, while 118 out of 196 government servants were attacked before the end of the year. An energetic system of drainage similar to that which proved so effectual in Havana and Ismalia was instituted. Swamps were filled up, jungle and undergrowth cleared, and a contour drain was constructed round the declivities in order to intercept incoming springs. The cost up to date was $26,000 (Mexican) for Klang and $59,000 (Mexican) for Port Swettenham, this comparatively large expenditure being sanctioned in order that the work of reclamation should be as permanent as possible and should provide good building sites in both towns. The admissions to hospital for malaria fell considerably. Only 2 out of 260 children, or 0.77 per cent., residing in Klang and Port Swettenham were found to contain the malarial parasite in November and December last, as against 91 out of 298 residing in the surrounding district, or 34.8 per cent. The amount of sickness in officers in the two towns showed a remarkable fall. The following are the figures: Sick certificates—1901, 236; 1902, 40; 1903, 23; 1904, 14. Days of leave—1901, 1,026; 1902, 198; 1903, 73; 1904, 71. Further, no officer has suffered since July, 1904, that is, during the worst malarial season. Perhaps Dr. Watson's most convincing statement, which he says he can not help recording with less satisfaction, is that his fees from private patients suffering from malaria have fallen to zero. He sums up thus: "The two areas which were so malarious in 1901 are now practically, if not absolutely, free from the disease, and the district surrounding them remains much as it was." Ninety-nine per cent. of the breeding places of anopheles have been removed. There is no evidence of any considerable emigration of anopheles into the drained areas from the extensive breeding grounds outside—a most important fact, for the possibility of such emigration has always been an excuse for neglecting anti-mosquito work.

Lord Lister's Birthday.

Lord Lister, famous in the earliest days of antiseptic surgery, has just celebrated his seventy-eighth birthday. His admirers throughout the world will be delighted to hear that he is still in good health.

Correspondence

Abuses in Medical Literature.

SAN ANTONIO, TEXAS, 1905.

To the Editor:—I believe that the ponderous systems of medical literature are indefensible on economic and on moral grounds. Our literature, in its present bulk, is accessible to the student, but, in two respects at least, it is wholly inadequate. The most brilliantly endowed and acquisitive mind can hardly grasp, in all its ramifications, the essential literature of a single department of medicine, and yet some general knowledge of all departments is a necessary prerequisite to the intelligent practice of any of its specialties. When every branch of medicine has a half dozen or more systems devoted to it, is it not a gross imposition on the reader's mind, a confusion of his memory and a waste of his time? In the desire to be just, rather than critical, in my search for motives, I have been forced to indulge hypotheses, and to ask myself if these repetitious compilations are honestly put together, and diluted through countless pages, to suit the assumed lower intelligence of the reader. It may be presumed that many collaborations, not a few of them displaying in their pages the blurred literary images of men of deserved eminence, grow out of the notion that the reader's respect for authority is weighed by the bulk and heft of the volume. Evidence might be adduced to support the graver charge, that it is not the first aim of expansive authorship to present concisely, to the more or less credulous and dependent reader, new and important knowledge, or old knowledge in new and improved form, but elaborately to display itself as high consultant authority. The desire for a wider clientele is peculiarly seductive, and there is a certain objectiveness about increasing fees which seems to blunt the moral perceptions and to confuse the most virtuous intentions. Even writers of conspicuous ability and of unimpeachable moral character give the weight and influence of their commanding names to many of these successful impositions on the patience of the profession.

Recently I was permitted to read the manuscript of an exceptionally able and conscientious writer, under contract to contribute 15,000 words to a certain new system. He assured me, with charming innocence of any intentional complicity in wrong doing, that his paper was a compilation, that it added not an iota to the knowledge of the subjects, and that he could have completed his part of the work in 2,500 words. I am an advocate of the one book for the one man, and I would qualify the man and hold him to certain rigid conditions. He should not be permitted to write, with nothing but the itch for inspiration, air egotistic puerilities or display the turbulent impulses of covert ambition, in too much space. He should not confuse his subject and the reader by senseless repetitions, forsake the sufficient pamphlet for the degenerated book, or needlessly abstract from its original accessible source knowledge already familiar to the reader.

It is a matter of common knowledge that medical literature is luxuriant in its growth, abundant in its knowledge and brilliant in its achievements; but it does not courageously adhere to its own intrinsic ordinances, and its ethics are too much under the influence of alien and prohibitive influences. It flaunts its wretched superfluities in the face of knowledge, and its benefits are administered too seclusively to the writer and exclusively to the reader.

Without, however, seeking to pry too curiously into the character of personal responsibility to science, impartial evidence seems to confirm the statement that each member of the profession has contributed, in one way or the other, to the general confusion and misbehavior of medical literature. We have not recognized and sustained with the right intelligence or moral courage its superior claims to impersonal consideration, nor have we opposed, as individual units of resistance, the impositions that have weakened its vitality and compromised its character. By what initiative and with what force and persuasiveness shall we undertake the re-establishment of literary authority? It is easier to ask this question than to answer it. Nevertheless, it may be suggested, as a beginning, that it is possible for each of us to discourage in himself, and to oppose in others, the suave and fluent insinuations of self-interests. It is possible to refuse to sanction collaborations of dubious merit, even when we discover held over them, in editorial benediction, the palms of some acknowledged high priest of medical thought. An aroused general sentiment, expressing itself along these lines, would separate, in time, the wheat from the chaff, attach responsibility where it belongs, and relegate to the background the conscious and willing disturbers of literature's more honest and capable efforts to meet the requirements of scientific progress.

When the general demand for truly expressive literature is raised high enough, in quality and morals, both writer and publisher will be forced to adapt themselves to the higher claims of literary propriety. This disposition apparently settles the question of mischievous authorship, for it may be argued that without readers the publisher must fail, as without a publisher the writer must fail. It is certainly true that the right demand will produce the right book, for it is as obviously a fact that the cultivated intelligence of the reader has its source and authority in books as it is that the book has its source and authority in the writer.

JAMES HALL BELL, M.D.

Clay Mixture Poultices.

UNIVERSITY OF MICHIGAN,
DEPT. OF MEDICINE AND SURGERY.

ANN ARBOR, MICH, May 4, 1905.

To the Editor:—Certain medical journals are publishing a letter from the Denver Chemical Company criticising Dr. A. H. Roth's article on clay mixture poultices (THE JOURNAL, April 15, p. 1185), and criticising THE JOURNAL for publishing it. The letter contains several erroneous statements and as I had something to do with the article, as I shall show below, I think it only fair to Dr. Roth and to THE JOURNAL to give the facts.

The gist of the letter can be condensed into the following statements, viz.:

1. That the manufacturers of the substance formerly carried an advertisement in THE JOURNAL of the American Medical Association.

2. That this advertisement was withdrawn.

3. That the manager of THE JOURNAL, influenced by this loss of the advertisement, got Dr. Roth to write the article and then sent to medical journals an abstract of it.

4. That the article failed to specify the name of the substance, though quoting from its literature.

5. That the firm expect their substance to be a topic of medical discussion.

6. That THE JOURNAL would have done better had it published an article by a "man of years and clinical experience" instead of one from a "youth."

7. That the conclusions of Dr. Roth are at variance with the clinical findings of 90 per cent. of the active practitioners of this country.

8. Finally, the letter requests that if the medical journal addressed publishes the abstract it will also publish the letter under consideration immediately following, so that readers may be aware of the circumstances surrounding the publication of the article.

1, 2 and 3: THE JOURNAL had nothing to do with the conception of the article and, so far as I can learn, nobody connected with THE JOURNAL knew anything about the article until the typewriten copy was sent to it. The full page advertisement was in THE JOURNAL when the experiments were begun. I understand that THE JOURNAL makes it a practice each week to send to those journals which have requested it an advance sheet containing abstracts of the original articles. Naturally an abstract of Dr. Roth's article was included among these abstracts.

4. Dr. Roth did not specify the particular brand of clay poultice used because he was concerned not so much with the species as with the general question. As he pointed out, different brands of similar preparations are on the market. I have even heard that such a preparation is to be mentioned in the United States Pharmacopeia. Simply because we happened to have several samples of one particular brand this was used in the experiments. Dr. Roth quoted from the literature of the makers for very natural reasons, and quoted not in order to plagiarize but to explain the reason for some of the points brought out in the article.

5. The statement that the makers expect the substance to be a topic of medical discussion can hardly be reconciled with the letter.

6. As regards Dr. Roth's age and clinical experience, I hardly think any defense is necessary. He probably is quite as old and has quite as much experience as many of those who get favorable clinical results. Dr. Roth's experiments speak for themselves; if his observations or conclusions are faulty that can easily be shown.

As regards No. 7, it may be that Dr. Roth's results are at variance with the findings of 90 per cent. of the active practitioners of this country. I have no means of contradicting this statement, but the following seems to me to be of interest: Dr. Roth read his article before a large medical society. I think it is safe to say that there were 150 men present. The general trend of the discussion was adverse to the use of such substances. One physician warmly objected to the reading of such a paper, on the ground of impropriety, because, he said, no reputable physician would use such material.

The article was instigated by me. I suggested the experiments to Dr. Roth in the beginning of 1904. Before that I had frequently discussed the use of clay poultices in clinics and before medical societies, when the question of the use of such substances was brought up. Dr. Roth (then Mr. Roth) and Mr. Munson began the experiments in my clinic on Feb. 4, 1904, and carried on a number of clinical observations in the next two or three months. Dr. Roth then finished the work in the fall of 1904, and it was ready for publication early in 1905. It was then announced on the program of a district medical society, and at the meeting was read and discussed. The editor of a medical journal published by a drug house asked the privilege of publishing the article. I told Dr. Roth that the article ought to go into a journal free from commercial affiliations and advised him to send it to THE JOURNAL of the American Medical Asssociation.

Dr. Roth has received a number of letters from men of standing in the profession congratulating him on the work and asserting a disbelief in the usefulness of such substances. He has not received any adverse criticism in this way.

8. I can not imagine that an editor of a medical journal would be influenced by the letter of the company; but the mere fact that such a letter was sent out puts in rather an unpleasant light the estimate that the writers have of the independence of editors. It is well known that many articles are written at the instigation of manufacturing firms. One can hardly object to this, but an effort to prevent the publication of adverse criticism strikes me as a very undesirable condition in medical journalism.

GEORGE DOCK.

The Pennsylvania Osteopath Bill.

PHILADELPHIA, May 4, 1905.

To the Editor. The governor of Pennsylvania has just vetoed the osteopathic bill, which passed both houses of the legislature, by methods which perhaps had better remain unnoticed. As the effort of these pretenders has been made in several states, a comparison of the bills submitted discovers one fact, which I believe it would be well to make plain through the columns of THE JOURNAL of the American Medical Association.

This point is best discovered and demonstrated by a quotation from Senate Bill No. 311 of Illinois, and, parallel therewith, from Bill No. 115, file of the Senate of Pennsylvania. Each of these bills, every physician should recognize, apparently provides for an examination for licensure to practice osteopathy on proving, before a proposed board of examiners, that the candidate is possessed of a standard of qualification approximating that of the medical laws of the highest standard as operative in a few of the states.

The common point, to which attention should be directed, is that a provision, more or less vaguely worded, is incorporated in these acts, which deprives the proposed law of the very strength and protection to the community, which it apparently bears on its face, because it imparts to the proposed board the right to dispense with examinations, and to issue licenses to practice.

In Section 4, of the Illinois bill, it is provided, that "he or she files with the board a certificate of the Illinois Osteopathic Association, a corporation duly organized and chartered under the laws of the state of Illinois, setting forth under seal attested by the president and secretary of the association that the person named in the certificate is a graduate of a reputable college of osteopathy; that he or she is of good moral character and that he or she is in good standing in his or her profession; that such applicants *shall* (mandatory), on the payment of five dollars ($5.00) receive an osteopathic physician's certificate *from the board without an examination.*" (Italics mine.)

The last three words unfold the plot.

Now, a parallel consideration of a similar provision in the Pennsylvania bill: In Section 2, it is provided that "A majority of the members of the whole board *shall* (mandatory on them) issue certificates of qualification (at this point it is not stated whether the qualification refers to the possession of credentials admitting to examination for licensure or qualification for practicing) to all applicants having a diploma from a legalized *reputable* recognized and regularly incorporated college of osteopathy in good standing as such *at the time it was issued.*" (Italics mine.)

In other words, this forces the board to recognize the diplomas of all the colleges of osteopathy, which the board considers to have been in good standing. It would thereby perpetuate the imperfections of these institutions, from the time of their origin.

"Said certificate shall be signed by the president and secretary of said board and attested by its seal (now for the point),

and *shall be conclusive of the right of the lawful holder thereof to practice osteopathy in the state.*" (Italics mine.)

A more flagrant attempt to pass off on a commonwealth an apparently protecting law, requiring qualification for those who attempt and profess to be able to treat all diseases by manipulation, could not well be conceived. The provisions quoted absolutely emasculate both laws, and perpetuate the evil by legalizing a body of men, a majority of whom would be empowered to exercise such far-reaching and weighty responsibilities, as licensing such a class of so-called practitioners.

I hope you will take this matter up at this juncture, as states like Texas, Missouri, New Jersey, New York and Illinois are keenly sensitive to this question, and in a state of mind to be thoroughly educated in this subject.

HENRY BEATES, JR.

Book on Immunity.

MARION, OHIO, May 6, 1905.

To the Editor: There has been appearing in THE JOURNAL for some time a series of articles on the subject of immunity. The articles are of a splendid character, and it has occurred to me that it would be a good idea to publish them in book form, making them more convenient for reference. I believe that the above voices the sentiment of hundreds of readers of THE JOURNAL, and I think that many other readers of THE JOURNAL and of other medical magazines would be glad to avail themselves of so valuable a publication. Will they be published in book form? A. MELVILLE CRANE.

[EDITOR'S NOTE: The above and many similar letters influence us to announce that the series will be published in book form, bound in cloth, at a probable price of about $1.00.]

Technic in Agglutination Tests.

MONTREAL, MAY 4, 1905.

To the Editor: In a letter just received Dr. F. F. Wesbrook points out to me that I have credited him in my paper on agglutination (THE JOURNAL, April 22, 1905, p. 1261) with *devising* a method for making accurate dilutions from dried blood in agglutination tests, whereas the method was *suggested* by him while the originality and perfecting of the *technic* belongs to Dr. Wilson. I should be very pleased if you would make this correction in your columns. OSCAR KLOTZ.

Association News

List of Those Who Will Go to Portland.

The "Portland Number" of THE JOURNAL, June 3, which will be the 1905 issue of the annual illustrated exposition of the annual session and the meeting place, will contain a list of all the special trains to Portland from various cities and a list of all physicians who have made reservations thereon, as far as this data is furnished by those in charge. Attention is here called to this proposal. Those in charge of trains are asked to have all such lists in this office Monday, May 22. Additions received up to May 25 will be used if the Portland write-up has not gone to press.

Stopovers Allowed at St. Paul and West.

In addition to the stopovers that are allowed at Denver, etc., and points west thereof, as described in THE JOURNAL, April 22, p. 1300, we are informed by Mr. C. A. Mathews, general agent of the Northern Pacific Railway, stopovers will be allowed at St. Paul, Minneapolis and points west thereof. We repeat the advice that physicians purchasing tickets learn the exact conditions governing stopovers.

Company Wanted to Portland, Alaska and Yellowstone.

AKRON, OHIO, May 6, 1905.

To the Editor: I wish to go to the session at Portland via the Canadian Pacific Railway, to join the excursion to Alaska, and to return via Yellowstone Park, but I do not wish to start on so long a journey alone.. It occurs to me that there are others planning the same route. Will you be so kind as to publish this, that we may arrange to travel together? J. G. GRANT.

NEW MEMBERS.

New members for the month of April:

ALABAMA.

Barclay, Jno. W., Birmingham.
Holloway, Wm. A., Lauderdale.
Foshie, Mason, Brewton.
Roe, L. W., Mobile.

ARKANSAS.

Dake, Charles, Hot Springs.
Dake, Frank Borland, Hot Springs.
Dorr, Robinson C., Batesville.
McKnight, J. F., Walnut Hill.
Tarver, B. F., Star City.
Walker, Henry Owen, Newport.

CALIFORNIA.

Abbott, Geo. Knapp, Glendale.
American, S., San Francisco.
Barrett, G. M., San Francisco.
Baylis, John N., San Bernardino.
Black, Stanley P., Pasadena.
Card, Egerton F., San Francisco.
Fly, Edw. M., National City.
Hastreiter, Rolland Frederick, Los Angeles.
Knowles, Cal W., San Francisco.
McConnell, E. G., San Francisco.
Osmun, Wm. F. H., San Francisco.
O'Bannon, R. W., Hollister.
Preston, Walton, San Francisco.
Pressley, James Fowler, San Francisco.
Perrault, E. L., San Francisco.
Robertson, H. M., Riverside.
Sherk, Henry Howard, Pasadena.
Sartori, Henry J., San Francisco.
Vaux, Exeter P., Santa Cruz.
Vassault, T. E., San Francisco.
Voorhies, Alfred Hunter, San Francisco.
Whitney, James Dorr, San Francisco.
Williams, T. M., Palo Alto.
Watts, Herbert C., Pinole.

COLORADO.

Darnall, Rolland F., Pueblo.
Engzellus, A. E., Denver.
King, W. W., Cripple Creek.
Monahan, D. G., Erie.
Oettinger, Bernard, Denver.
Powell, Cuthbert, Denver.
Senger, William, Pueblo.
Stough, Charles F., Colorado Springs.
Walker, Chas E., Denver.

FLORIDA.

Cox, J. H., New Smyrna.

GEORGIA.

Chason, Gordon, Bainbridge.
Saliba, M. M., Savannah.

HAWAIIAN TERRITORY.

Sawyer, Frank Everett, Honolulu.

ILLINOIS.

Brown, Richard H., Chicago.
Berry, J. C., Chicago.
Brumback, A. H., Chicago.
Brower, D. R., Jr., Chicago.
Campbell, J. F., Chicago.
Callaway, W. L., Chicago.
Cook, A. L., Mason City.
Clark, John Sheldon, Freeport.
Davis, Charles J., Deerfield.
Davis, H. I., Chicago.
East, Clarence W., Chicago.
Flint, Helen C., Chicago.
Guertin, J. A., Beaverville.
Going, Z. H., Chicago.
Good, R. H., Chicago.
Hemala, Richard, Onarga.
Heath, Clarence W., Chicago.
Hager, S. M., Chicago.
Hood, J. J., Chicago.
Hagey, H. H., Chicago.
Howell, H. L., Bloomington.
Hughes, G. W., Armstrong.
Kraft, J. C., Chicago.
Miner, Elizabeth R., Macomb.
McConnell, G. G., Chicago.
McClare, A. W., Chicago.
Newell, Mary B., Onarga.
Newell, A. J., Onarga.
Olney, Thomas A., Chicago.
Oswald, J. W., Chicago.
O'Brien, G. G., So. Chicago.
Peairs, Geo. M., Joliet.
Phillips, F. A., Chicago.
Perekhan, J. S., Chicago.
Parker, R. M., Chicago.
Rice, E. Perry, Chicago.
Steen, Earl R., Joliet.
Seidel, Albert W., Chicago.
Solliday, Monroe H., Owaneco.
Wells, William H., Chicago.

INDIANA.

DuBois, F., Liberty.
Flynn, E. W., Jeffersonville.
Hardesty, J. C., New Castle.
Mottier, Guilford A., Richmond.
Runcie, Geo. U., Poseyville.
Smith, Geo. H., Knightstown.
Sugg, Henry H., Mt. Vernon.
Tilford, A. S., Martinsville.

INDIAN TERRITORY.

Hardy, Walter, Ardmore.

IOWA.

Carpenter, G. P., Cedar Rapids.
Clark, Margaret V., Waterloo.
Graham, D. E., Bradgate.
Goodale, L. H., Nashua.
Ghrist, Jennie G., Ames.
Jones, N. Jasper, Shelby.
Janss, Henry, Marshalltown.
Kime, J. W., Fort Dodge.
Melott, E. H., Ogden.
Rice, N. J., Council Bluffs.
Robb, Winifred A. Yelton, Hiteman.
Robb, Robert, Hiteman.
Rust, David, Whiting.
Schlag, R. A., Monroe.
Thompson, O. P., Shell Rock.
Van Ausdall, G. M., New London.
Warren, Alexis M., Sioux City.
Wyatt, W. W., Kamrar.
Williams, Edw. B., Montezuma.

KANSAS.

McGuire, Clarence A., Topeka.
Maxson, J. C., Goff.
Nichols, Roscoe Townley, Liberal.
Neptune, John W., Salina.
Spain, Clifford R., Jewell.
Sippy, John J., Belle Plaine.

KENTUCKY.

Cecil, J. G., Louisville.
Griffin, Silas, Henderson.
Harvey, Charles W., Louisville.
Newman, Howard D., Drakesboro.
Percefull, R. C. J., Yost.
Stevens, W. F., LaCenter.

LOUISIANA.

Kittredge, W. E., Napoleonville.

MAINE.

Bayard, Clayton H., Orono.
Bell, Charles W., Strong.
Wheet, Fred C., Rumford Falls.

MARYLAND.

Edmunds, Page, Baltimore.

MASSACHUSETTS.

Baff, Max, Worcester.
Burger, G. L. Hagen, Boston.
Brown, Melvin J., New Bedford.
Bruce, F. C., Easthampton.
Cummings, Michael A., Fall River.
DeNormandie, R. I., Boston.
Friedman, L. V., Boston.
Jackson, A. W., Milford.
Keith, Halbert Lynn, Milford.
Lucksinger, Harry W., Husatonia.
Palmer, L. M., So. Framington.
Smith, Wm. Henry, Boston.
Thompson, F. H., Fitchburg.

MEXICO.

Turpin, T. J., Monterey.

MICHIGAN.

Canfield, R. B., Ann Arbor.
Clifford, R. A., Ypsilanti.
Hayward, E. H., Detroit.
Morris, Roger S., Ann Arbor.
Seymour, Wm. J., Detroit.
Van Baalen, M. R., Detroit.
Ver Meulen, John, McBain.

MINNESOTA.

Bishop, C. Wesley, Minneapolis.
Beckman, E. H., Minneapolis.

Budd, J. Danly, Two Harbors.
Desmond, Michael A., Eagle Bend.
Higgins, J. H., Rockford.
Loberg, Adolph E., Minneapolis.
Osborn, Lida, Mankato.
Pine, Alcinda A., St. Paul.
Shaleen, Arthur W., Hallock.
Stemsrud, A. A., Dawson.

MISSISSIPPI.

Castle, Sara Allen, Meridian.

MISSOURI.

Allen, T. C., Bernie.
Gilmore, E. E., Adrian.
Rea, Robert W., Plattsburg.
Shutt, C. H., St. Louis.
Sturgis, Jno., Perrin.

MONTANA.

Schapps, Jno. C., Butte.

NEBRASKA.

Barnes, Chester D., Tecumseh.
Boylan, J. H., Eddyville.
Cook, E. W., Plattsmouth.
Kaspar, Jos. Francis, Prague.
McCoy, Hiram F., Benson.
McCrea, Edw. Lee, Table Rock.
Sample, Jos. Richard, Hastings.
Sanders, S. F., Holdrege.
Wertman, Harry J., Milford.

NEVADA.

Mooser, Chas. Edw., Reno.

NEW HAMPSHIRE.

Dougherty, Thos. J., Somersworth.
Eastman, Oliver D., Woodsville.

NEW JERSEY.

Ranson, Briscoe B., Jr., Maplewood.

NEW MEXICO.

Swope, S. D., Deming.
Wylder, M. K., Albuquerque.

NEW YORK.

Bermingham, F. H., Brooklyn.
Cook, F. B., New York City.
Cohn, Felix, New York City.
Eversfield, F. J., New York City.
Francis, Lee Mastin, Buffalo.
Griffin, John M., Warrensburg.
Gould, J. P., New York City.
Horn, John, New York City.
Halpern, Julius, New York City.
Haas, L. F., New York City.
Riggio, Louis D., New York City.
Ruzicka, D. J., New York City.
Stern, A. R., New York City.
Townsend, C. E., Newburgh.
Wells, S. W., Liberty.
Willard, T. H., New York City.

NORTH CAROLINA.

Adams, M. R., Statesville.
Jones, Wm. M., Jr., Hendersonville.
Kirk, Wm. Redin, Hendersonville.
Long, H. F., Statesville.

NORTH DAKOTA.

Crane, C. S., Grand Forks.

OHIO.

Beam, A. H., Hillsboro.
Borts, Matthias, Cleveland.
Clapp, H. T., Cleveland.
Garlick, H. S., Cincinnati.
Rattermann, Frank L., Cincinnati.
Smith, D. B., Cleveland.
Scholtz, Moses, Cincinnati.

OKLAHOMA.

McLennan, E. J., Medford.
Stoops, R. P., Norman.

OREGON.

Dodds, H. C., Dufur.
Pohl, Esther C., Portland.

PENNSYLVANIA.

Andreas, G. R., Wilkesbarre.
Buyers, Edgar Stanley, Norristown.
Banks, W. B., Philadelphia.
Douglass, W. Tyler, Harrisburg.
Duffy, Ralph, Pittsburg.
Fox, Herbert, West Philadelphia.
Foulkrod, Collin, Philadelphia.
Gilbride, John J., Philadelphia.
Hertz, John Lincoln, Lititz.
Hall, Wm. M., Conshohocken.
Hopkinson, O., Philadelphia.
Henry, John Norman, Philadelphia.
Johnson, Chas. M., McVeytown.
Kliduff, Robert O., Philadelphia.
Klopp, Peter P., Philadelphia.
Kistler, Clinton J., Lehighton.
Metheny, L. A. Sterrett, Philadelphia.
Masters, Geo. B., Rockwood.
Schlefly, John E., Edwardsville.
Sherrer, F. A., Easton.

RHODE ISLAND.

Kingman, Eugene, Providence.

SOUTH CAROLINA.

Blake, L. J., Spartanburg.
Lee, H. B., Summerville.
Mazyck, W., Charleston.

SOUTH DAKOTA.

McWhorter, Port, Miller.
Templeton, C. V., Woonsocket.

TENNESSEE.

Venn, Jos. H., Memphis.

TEXAS.

Ardrey, L. L., Bandera.
Brown, Alexander A., San Antonio.
Boyles, James H., Houston.
Bell, Jessup D., San Antonio.
Brown, W. W., Groesbeck.
Brokaw, C. P., Dalhart.
Denman, Richard L., Lufkin.
Frizzell, Thos. D., Powell.
Ford, Frank C., Houston.
Hollis, L. W., Abilene.
Jeffries, J. W., Del Rio.
Lowry, David O., Enloe.
Lyon, James R., Rising Star.
McCarty, James F., Comanche.
Selman, H. S., Llano.
West, O. C., Del Rio.

VERMONT.

Thomson, J. E., Rutland.

VIRGINIA.

Baird, Thompson M., Crewe.
Buxton, J. T., Newport News.
Creasy, W. F., Newport News.
Glover, Perkins, Arvonia.
Kirk, T. Allen, Roanoke.
Pitman, W. E., Lynchburg.
Painter, Margaret V., Salem.
Robertson, L. A., Danville.
Robinson, W. L., Danville.
Rennie, John G., Petersburg.
Strohecker, T. H., Salem.
Willis, F. D., Newport News.
Wiley, R. M., Salem.

WASHINGTON.

Russell, Walter Eugene, Walla Walla.
Stephens, L. L., Monroe.
Watkins, Harry C., Hoquiam.

WEST VIRGINIA.

Johnson, H. R., Fairmont.
Maxwell, Cyrus H., Morgantown.

WISCONSIN.

Birkelund, John R., Phillips.
Bancroft, H. V., Bluemounds.
Echols, C. M., Appleton.
Hinn, Louis P., Fond du Lac.
Thielke, G. O., Wausau.

Marriages

GEORGE F. CHOPIN, M.D., to Miss Frances Gleeson, both of St. Louis, April 24.

SAMUEL ROBINSON, M.D., to Miss Ellen Derby Bellows, both of Boston, April 29.

W. E. DRAPER, M.D., Manilla, Iowa, to Miss Lucy Heim of Dawson, Neb., April 6.

FRANK B. HARMISON, M.D., Chicago, to Miss Sylvia Powers of Peoria, Ill., April 26.

RALPH E. JENNINGS, M.D., Chicago, to Miss Edna G. Gill, at Warsaw, Ind., April 23.

HORACE L. JONES, M.D., to Miss Martha Ann Pope, both of Jackson, Tenn., April 26.

MICHAEL F. WANSBURY, M.D., to Miss Jennie Petley, both of Troy, N. Y., April 26.

CORNELIUS A. BARNETT, M.D., to Miss Agnes Hayes, both of Potsdam, N. Y., April 24.

CLAUDE BARTON, M.D., Homestead, Pa., to Miss Olive Landis of Carlisle, Pa., April 27.

EDUARDO ANDRADE, M.D., to Miss Mary McLaughlin, both of Jacksonville, Fla., April 26.

JAMES AVERY DRAPER, M.D., Wilmington, Del., to Miss Elsie Ford of St. Louis, April 26.

EDWARD LUKE, M.D., Coin, Iowa, to Miss Delia Johnson of Monroe City, Mo., April 26.

JOHN LAWRENCE YATES, M.D., Chicago, to Miss Katherine Gross of Baltimore, April 26.

SAMUEL D. NIXON, M.D., Chicago, to Miss Lillian Maude Reddy of Gibbon, Neb., April 27.

ROY ORCHARD WOODRUFF, M.D., to Miss Veray May Hall, both of Bay City, Mich., April 26.

NORMAN D. MORRISON, M.D., San Mateo, Cal., to Miss Amy Bull of Santa Clara, Cal., April 26.

ROBERT B. RIDLEY, JR., M.D., Atlanta, Ga., to Miss Roberta Render of La Grange, Ga., April 27.

ROGER DURHAM, M.D., to Miss Helen Holman, both of Brooklyn, N. Y., at Radnor, Pa., May 10.

CHARLES C. MOORE, M.D., Owensburg, Ind., to Miss Emma Nixon of Washington, Ind., April 16.

THOMAS HARTLEY HALL, M.D., Macon, Ga., to Miss Carolle English of Vineville, Macon, April 26.

JOHN CHARLES DARBY, M.D., to Miss Winifred Bryant Dudley, both of Cleveland, Ohio, April 26.

JAMES B. PURNELL, M.D., Snow Hill, Md., to Miss Margaret R. Spence of Jacksonville, Fla., April 30.

FRANK KELLS FELAND, M.D., Atlanta, Ga., to Miss Mollie Leila Horsley of West Point, Ga., April 25.

JONAS J. MOYER, M.D., Mayfield, Cal., to Miss Vernie Shuler of Los Angeles, at San Francisco, April 19.

RODNEY PAUL MCLAIN, M.D., Iconium, Iowa, to Miss Goldie Georgia Worster of Keokuk, Iowa, April 26.

HORACE T. RIVERS, M.D., to Miss Eula McKinney, both of Paducah, Ky., at Jefferson City, Mo., April 25.

JOHN H. BUNN, M.D., Cable, Ohio, to Miss Nellie Vance of Woodstock, Ohio, at Marysville, Ohio, April 22.

THEODORE E. SANDS, M.D., Battle Creek, Mich., to Miss Elizabeth Millspaugh, at Evanston, Ill., April 23.

RALPH HUSTON SPANGLER, M.D., Philadelphia, to Miss Marilla Kemmerer Keifer of Scranton, Pa., April 27.

WILLIAM DEMPSEY PARTLOW, M.D., Tuscaloosa, Ala., to Miss Margaret Cummings Nixon of Birmingham, Ala., April 26.

KENNETH ALEXANDER JAMES MACKENZIE, M.D., Portland, Ore., to Mrs. Marion Higgins Brown of Spokane, Wash., April 26.

Deaths

J. Howard Pugh, M.D. Department of Medicine of the University of Pennsylvania, Philadelphia, 1852, a member of the American Medical Association; the oldest practitioner of Burlington, N. J.; congressman from the second New Jersey district in 1876; for 36 years president of the Mechanics' National Bank, Burlington; some-time president of the Burlington County Medical Society; died at his home in Burlington, April 30, from senile debility, aged 77.

Robert Maurice King, M.D. Jefferson Medical College, Philadelphia, 1867, treasurer of the St. Louis Medical Society, formerly lecturer on physiology and clinical medicine in the St. Louis College of Physicians and Surgeons, and professor of materia medica and clinical therapeutics in Beaumont Medical College, died at the St. Louis Baptist Hospital, May 2, two days after an operation for the removal of gallstones, from uremia, aged 61.

Oliver Woodson Nixon, M.D. Jefferson Medical College, Philadelphia, 1854, medical director of the Army of the Missouri, on General Pope's staff during the Civil War; twice treasurer

of Hamilton County, Ohio, and thereafter devoting himself to literary pursuits; author of "How Marcus Whitman Saved Oregon"; one of the founders of Marcus Whitman College, Walla Walla, Wash., died at Biloxi, Miss., May 9, aged 79.

Israel **A. Powell, M.D.** Years of Practice, Illinois, 1900, for more than 40 years a practitioner; a member of the legislature in 1871; collector of internal revenue for the Eleventh Illinois district, under President Grant; one of the organizers of the first medical society in the Wabash Valley, died at his home in Homer, Ill., May 1, from senile debility, after a long illness, aged 79.

Samuel **Henderson Griffith, M.D.** Department of Medicine of the University of Pennsylvania, Philadelphia, 1873, surgeon (lieutenant commander) U. S. Navy, fleet surgeon of the Atlantic Training Squadron, was taken ill with cholecystitis at Guantanamo, Cuba, and brought to his home in Washington, where he died, April 23, after an illness of six weeks, aged 53.

James **Porter Parker, M.D.** Tulane University of Louisiana Medical Department, New Orleans, 1901, of New Orleans, a member of the American Medical Association, visiting surgeon to the Eye, Ear, Nose and Throat Hospital, and a most promising young scientist and physician, died at the Hôtel Dieu, New Orleans, April 27, after an illness of three weeks, aged 28.

Lee **Henry Streaker, M.D.** University of Louisville Medical Department, 1900, formerly assistant physician of the Northern Indiana Hospital for the Insane, Logansport, and physician to the Indiana Northern Penitentiary, Michigan City, died at his home in Salem, Ind., April 29, from tuberculosis, after an illness of five months, aged 30.

John **Calvin Allen, M.D.** Louisville Medical College, 1883, a member of the American Medical Association, formerly of Slaughter, East Feliciana Parish, La., but for the last eight years a resident of Baton Rouge, died at the Touro Infirmary, New Orleans, April 28, after an operation for appendicitis, aged 48.

Story **N. Goss, M.D.** Dartmouth Medical School, Hanover, N. H., 1856, assistant surgeon of the Ninth Vermont Volunteer Infantry, and later acting assistant surgeon, U. S. Army, during the Civil War, died at his home in Chelsea, Vt., April 27, from locomotor ataxia, after a long illness, aged 74.

Andrew **Douglas Hall, M.D.** University of Pennsylvania, Philadelphia, and Jefferson Medical College, Philadelphia, who was connected with the Wills Eye Hospital for 30 years, and served as surgeon in the Army during the Civil War, died at his home in Philadelphia, April 25, age 72.

Alexander **Muckle, M.D.** Department of Medicine University of Pennsylvania, Philadelphia, 1853, for many years assistant assayer and refiner at the United States Mint in Philadelphia, died at his home in that city, April 29, from cerebral hemorrhage after a short illness, aged 75.

Albert **Newman, M.D.** Darmouth Medical School, Hanover, N. H., 1850; surgeon of the Third Kansas Volunteer Infantry in the Civil War, a pioneer physician of Kansas, died at his home in Lawrence, Kan., April 28, from senile debility, after an illness of two weeks, aged 80.

John **M. Cox, M.D.** Starling Medical College, Columbus, Ohio, 1854, a member of the Ohio State Medical Society, and a practitioner of South Salem, Ohio, for more than half a century, died from pneumonia at his home in that village, April 10, after a short illness, aged 81.

Francis **Wayland Campbell, M.D.** McGill University Medical Department, Montreal, 1860, dean of the Medical Faculty of Bishop's College University, and for many years editor of the *Canada Medical Record*, died at his home in Montreal, May 4, after a long illness, aged 67.

William **Cummings Shannon, M.D.** Bellevue Hospital Medical College, New York City, 1875, major and surgeon, U. S. Army, who was retired from the Army in 1898 on account of ill health, died at his home, Oakland Farm, Elkhorn, Neb., April 21, from nephritis, aged 53.

Gilbert **E. McKeeby, M.D.** Bellevue Hospital Medical College, New York City, 1868, of Pueblo, Colo., sometime state senator in Wisconsin and Nebraska, and mayor of Red Cloud, Neb., died suddenly in Pueblo from cerebral hemorrhage, April 24, aged 60.

Albert **A. Davis, M.D.** College of Physicians and Surgeons in the City of New York, 1864, a member of the New York Academy of Medicine, and the Medical Society of the County of New York, attending physician to St. Luke's Hospital, died May 6.

William **Hammond, M.D.** University of Maryland School of Medicine, Baltimore, 1847, assistant surgeon in the Army until 1853, and thereafter a resident of California, died at his home in San Francisco, May 5, aged 80.

James B. Grady, M.D. Jefferson Medical College, Philadelphia, 1875, formerly in the Medical Department of the Army, died at his home in Los Angeles, Cal., May 1, from cerebral hemorrhage, aged 54.

Myron Allen Todd, M.D. Ohio, 1876, for several terms health officer and city physician of Bradford, Pa., died at his home in that city, May 4, from septicemia, after an illness of three days, aged 58.

Asa Hopkins Churchill, M.D. Medical Institution of Yale College, New Haven, Conn., 1857, died at his home in Meriden, Conn., Oct. 17, 1903, from heart disease, after an illness of two years, aged 72.

George W. Marshall, M.D. College of Physicians and Surgeons, Keokuk, Iowa, 1873, died at his home in Lima, Ill., April 28, from cerebral hemorrhage, after an illness of one week, aged 81.

William Milner, M.D. University of Louisville Medical Department; 37 years' practice, Kentucky, 1893, died at his home in Union Star, Ky., April 22, from cerebral hemorrhage, aged 74.

James **M. Hutchinson, M.D.** Chicago Medical College, 1867, one of the three first internes to be appointed to Cook County Hospital, died at his home in Chicago, May 6, from paresis, aged 62.

Clara M. Davidson, M.D. Woman's Medical College of Pennsylvania, Philadelphia, 1893, died at her home in Newberg, Ore., April 20, from septicemia contracted in a surgical operation.

Isaac M. Miller, M.D. Kansas City (Kan.) University Medical Department, 1883, died at his home in La Due, Mo., April 16, after a prolonged illness, from heart disease, aged 50.

Frank P. Harris, M.D. Jefferson Medical College, Philadelphia, 1892, died at his home in Wilmington, Del., April 30, from pneumonia, after an illness of one week, aged 52.

John A. Cake, M.D. Department of Medicine of the University of Pennsylvania, Philadelphia, 1893, died at his home in Sunbury, Pa., April 23, from consumption, aged 36.

Charles Edgar Greenman, M.D. Albany (N. Y.) Medical College, 1889, died at his home in Troy, N. Y., April 25, from heart disease, after an illness of one day, aged 37.

Julius Adolph Nordbrock, M.D. New York City, 1900, died at his home in Brooklyn from rheumatism of the heart, April 25, after an illness of two weeks, aged 37.

Frank Preston, M.D. University of Vermont Medical Department, Burlington, 1903, of Greene, N. Y., died recently at Ticonderoga, N. Y., from pneumonia.

James P. Foster, M.D. Cincinnati, Ohio, 1856, died at his home in Cloverdale, Ind., February 10, from senile debility, after an illness of ten days, aged 81.

Enoch C. Ross, M.D. Cleveland (Ohio) Medical College, 1870, twice representative in the Ohio legislature, died at his home in Malvern, Ohio, April 28, aged 55.

Washington L. Baird, M.D. University of Louisville Medical Department, 1885, died recently at his home in Jackson, Tenn., and was buried, April 23, aged 65.

John Goode, M.D. New York University, New York City, 1858, died at his home in Magnolia, Ark., April 27, after an illness of several weeks, aged 67.

Ithamar C. Stevens, M.D. St. Louis, 1877, died at San Antonio, Texas, February 9, from chronic bronchitis, after an illness of four months, aged 59.

Lawrence R. Stablein, M.D. Missouri, 1898, died from tuberculosis at his home in Los Angeles, Cal., April 16, after an illness of several years, aged 40.

S. H. Tindal, M.D. Medical College of the State of South Carolina, Charleston, 1867, died suddenly at his home in Denmark, S. C., April 28, aged 73.

William A. McCoy, M.D. Jefferson Medical College, Philadelphia, 1884, died at his home in Dallas, Texas, April 25, from heart disease, aged 60.

Joseph Henry Campbell, M.D. Cooper Medical College, San Francisco, 1888, died in San Francisco in March, from pneumonia, aged about 40.

Benjamin F. Pendery, M.D. Examination, California, 1883, died at his home in Sacramento, April 27, after a long period of ill health, aged 53.

Nelson C. Hancock, M.D. Medical Department of the Uni-

versity of Tennessee, Nashville, 1881, died recently at his home in Chickaska, I. T.

N. Prentiss Potter, M.D. Medical School of Maine at Bowdoin College, Brunswick, 1871, died at his home in Bridgton, Maine, April 18.

John R. G. Allison, M.D. Jefferson Medical College, Philadelphia, 1884, formerly of Le Roy, Pa., died recently in Centre County, Pa.

D'Albert Hiller, M.D. California Years of Practice, 1876, died at his home in San Francisco, April 25, after a long illness, aged 65.

James E. Thompson, M.D., died from erysipelas at his home in Kansas City, Kan., April 17, after an illness of four days, aged 54.

Kristian G. Hofflund, M.D. Keokuk (Iowa) Medical College, 1891, of Baltic, S. D., died recently at Dell Rapids, S. D.

Richard W. Birchett, M.D. Louisville Medical College, 1873, died at his home in Owenton, Ky., May 3, aged 67.

Julia A. Powers Mills, M.D., died from uremia at Mills Mills, N. Y., February 10, aged 85.

Book Notices

THE DISEASES OF SOCIETY (The Vice and Crime Problem). By G. Frank Lydston, M.D., Professor of Genito-urinary Surgery, State University of Illinois. Cloth. Pp. 624. Price, $5.00 net. Philadelphia: J. P. Lippincott Co. 1904.

As its title indicates, this book covers an extensive subject and one in which the physician as well as the sociologist is, or should be, deeply interested. The social diseases of our times as well as of the past form what we might call an attractively repulsive subject, one that is of wide general interest to the student of social problems, covering in fact the larger part of his field of investigation. Man as an individual is a bundle of evil possibilities, many of them realized, and in the aggregate he cannot be said to be much better. Lydston's book, therefore, is a portrayal of the darker side of humanity and what will be a vivid and startling one to most casual readers. Its point of view is that of a scientific materialism; the criminal and the social transgressor as a class are looked on as largely the product of heredity and environment. We say "largely" because the author admits that the pendulum of progress has swung possibly too far in the material direction and therefore rejects some of what he considers the extreme opinions of the present day. To those who read the work with an orthodox theological bias, however, there will be many things to which to take exception. The author's personality is very strongly in evidence in many ways, but the book is a live one, and one that ought to be studied by all social and moral reformers even if they can not share its author's views in all respects. To some his ideas on political and social matters will seem too pessimistic, and to others his remedies offered may appear inadequate. The reformation of society will be brought about, in his opinion, by such measures, among others, as the scientific regulation of marriage, the sterilization of criminals and defectives, etc., and he possibly does not take sufficiently into consideration the element of the idea of a super rational sanction on the motives of human conduct in the evolution of morals and in human progress. This, however, is a matter in which the reader will agree or disagree with the author according to his predilections. Lydston's humanitarian spirit, however, is manifest throughout and the most orthodox reformers will find in his practical views far more with which they are in accord than with which they must disagree. As a collection of valuable information on the subjects of which it treats too much cannot be said of the work. It is needless to say that it is written in the usual vigorous English with which the other writings of this author have made us acquainted; it is altogether one of the very best works that has yet appeared on this now more than ever engrossing branch of social study.

THE MODERN MASTOID OPERATION. By Frederick Whiting, A.M., M.D., Professor of Otology, Cornell University Medical College. Illustrated by 25 Half-tone and 23 Key Plates Made from Original Drawings. Half Leather. Pp. 353. Price, $6.00. Philadelphia: P. Blakiston's Son & Co. 1905.

The half-tone reproductions, a special feature of this work, have been excellently done from a series of artistic original drawings, true to nature, illustrating the details of the various steps in the operation, together with other drawings showing the points in the anatomy of the temporal bone which must be kept clearly in mind while performing the operation on the mastoid. In order not to detract from the clearness of these reproductions the author has made a set of pen sketches from which zinc etchings have been made. These are labeled and printed on the pages opposite the half-tone plates and serve as keys. The value of the volume as an atlas will be well worth the price of the book to one who would familiarize himself with the details of the modern mastoid operation. The illustrations will serve as an excellent guide which a beginner can use in working out for himself the technic of the operation on the cadaver. The careful attention to detail which the author has shown in the preparation of the drawings indicates well the character of the text. No detail from the preparation of the patient to the closure of the wound is too insignificant to receive his most careful critical attention. The first three chapters of the book dealing respectively with "The Development of the Operation for Drilling the Mastoid Process," "The Schwartze Operation," and "The Complete Modern Mastoid Operation, a Flap Operation," serve as an excellent introduction to the subsequent chapters on the technic of the modern operation, for a knowledge of the history of the operation on the mastoid is necessary for an understanding of the modern operation and a just appreciation of its various details. The chapters on the technical portion of the operation also show painstaking critical attention to detail. The clear and definite manner in which each step of the operation is treated gives evidence of the careful work of the experienced surgeon. The author makes a strong plea for the flap method of making the opening in the integument, and also for the complete exenteration of all the mastoid cells. His logical conclusions on these questions have the support of an ample experience with the other methods in vogue.

THE VERMIFORM APPENDIX AND ITS DISEASES. By Howard A. Kelly, A.B., M.D., Professor of Gynecology in the Johns Hopkins Hospital, Baltimore, and E. Hurdon, M.D., Assistant in Gynecology in the Johns Hopkins University, Baltimore. With 399 Original Illustrations, Some in Colors, and 3 Lithographic Plates. Cloth. Pp. 827. Price, $10.00 net. Philadelphia and London: W. B. Saunders & Co. 1905.

This is by far the most elaborate work that has yet appeared on this subject. The opening fifty pages are historical and trace in an interesting manner the growth of our knowledge of the affections of the appendix and their treatment. Following are about one hundred and fifty pages devoted to the anatomy and physiology of this organ and associated parts. Here one finds not only practically all of the almost innumerable anatomic variations of this region carefully described and depicted, but also an extensive description of its embryology and comparative anatomy. There is scarcely a clinical form, or a symptom or a complication of this multiform disease which is not mentioned, and many unusual cases and interesting points connected therewith not elsewhere published have been obtained by personal communication from many prominent operators throughout the country. An interesting chapter is that on appendicitis in typhoid fever. That the appendix should be involved in typhoid fever is not surprising considering the large amount of lymphoid tissue contained in it. In a number of cases the symptoms referable to the appendix have overshadowed for the time those due to the typhoid fever, and operations have been done, the cases subsequently passing through a regular typhoid. An entire chapter is devoted to appendicitis in the child, and the frequency with which mistakes in diagnosis are made in these young subjects, with resulting improper treatment, is clearly presented. The treatment, which is of so much interest at this time, is handled in a very judicious manner. One very pertinent sentence will bear repeating and should never be forgotten. "It may be positively stated that no case of appendicitis where an operation was necessary was ever operated on too soon, and when the decision to operate is made no consideration, however plausible, should be admitted as a reason for unnecessary delay." The publisher's part has been unusually well done, and the illustrations are unequaled in

excellence in any similar work which has been presented to the profession. In fact the illustrations are marvels of excellence and are a credit to all concerned. The authors and publishers deserve special credit for the volume.

CLIMATE AND HEALTH IN HOT COUNTRIES and the Outlines of Tropical Climatology. A Popular Treatise on Personal Hygiene in the Hotter Parts of the World, and on the Climates That Will Be Met with Within Them. By Lieut.-Col. G. M. Giles, M.B., F.R.C.S., Indian Medical Service (Retd.). Cloth. Pp. 109. Price, $3.00 net. New York: William Wood & Co. 1905.

The first and larger part of this volume is devoted to a popular exposition of the points of personal hygiene as applied to hot countries. Although written for the non-professional reader, it is of interest and value to physicians as well. The subject is treated under such headings as housing and domestic architecture, clothing, water and food, the tropical day, management of children in hot climates, tents and camp sanitation, prevention of malaria, prevention and treatment of common tropical diseases. The author writes with authority and his recommendations show that he is perfectly conversant with the conditions which must be met by traveler and resident in the tropics. The second part is devoted to a detailed description of localities within the tropics. The fact that climates in the hot parts of the world vary more than those in temperate zones is not generally appreciated. Numerous meteorologic tables increase the usefulness as a book of reference. As is to be expected of an English writer, those countries which are dependent on Great Britain are most fully described. Fifty-seven pages are devoted to the lands bordering the Mediterranean, other portions of Africa, Madagascar, Mauritius, the Red Sea and its coasts, Asia, the Malay Archipelago, Northern Australia and the Pacific islands, but less than twenty are given to the American continents, i. e., the southern states of this country, Mexico, West Indies, tropical South America, Bermuda and Madeira. Although the subject of tropical hygiene is intrinsically interesting, it now appeals to Americans more than formerly, since many of our people will hereafter live within the tropics.

THE PREPARATION AND AFTER-TREATMENT OF SECTION CASES. By W. J. Stewart McKay, M.B., M.Ch., B.Sc., Senior Surgeon of the Lewisham Hospital for Women and Children, Sydney. Cloth. Pp. 651. Price, 15 shillings net. London: Bailliere, Tindall & Cox. 1905.

Mr. McKay was a co-worker with Christopher Martin under the late Lawson Tait. His training, though supplemented by continental observation, is distinctly British, and his books reflect the methods in vogue in Britain in the preparation and post-operative management of celiotomies. As American operators are now closely in touch with continental surgeons, they will doubtless be interested in the viewpoint of the British laparotomist transplanted, though he be, to antipodal shores. The object of Mr. McKay has been to prepare for the beginner in abdominal technic, a work so circumstantial and minute in its method as to take the place of a hospital interneship, as far as possible. He has certainly brought together a remarkable amount of elementary information, much of which will be of value to the experienced surgeon, while the frequent references to individual cases gives a touch of concreteness to theoretical statement. The author discusses with much ability the complications occasionally observed after abdominal section, and enters into their management or relief by secondary operation with his customary thoroughness. It is a pleasure to commend a book into which the writer throws himself so unreservedly and generously as does Mr. McKay in the present work.

Miscellany

Proportion of the Sexes in the United States.—Statistics of the United States Census Bureau show that there are in the United States 1,638,321 more males than females, the relative excess of males being greater than the average for all countries whose population has been counted with distinction of sex. The cities of the United States, however, contain more females than males. Perhaps more women find employment in cities.

The Automobile and Tuberculosis.—A French physician, M. Blanchet, advises the use of the automobile by consumptives. He claims that the rapid movement in the open air reduces the tendency to cough and improves the appetite. It causes refreshing sleep, the motion acting as a sedative to the nervous system and the increased oxygenation assisting to the same effect. The dangers of the automobile are dust, which should be avoided, chilling the cutaneous surface, and overdoing the exercise by excessive speed. Great speed induces anxiety and enervates the patient.

Resection of Nerve for Gangrene of Foot.—Bardescu of Roumania reports in *Spitalul*, No. 22, 1904, the case of a farmer, 33 years old, who suffered from painful, spontaneous gangrene of one foot. Epidural cocainization failed to relieve, as also stretching of the external and internal popliteal nerves. Finally, the internal popliteal nerve was resected for 4 to 5 cm. in the popliteal space, and the pains were at once abolished. The gangrene also began to show signs of demarcation, allowing disarticulation later under favorable circumstances. The sensibility of the entire region returned.

Pharmacist and Physician.—"At present the market is flooded with ready-made preparations suitable for all ills and diseases. All that is required is to read the printed matter on such a package, follow the directions, take from one to twenty bottles and you are cured. It requires no skill or knowledge to sell these preparations, either by a graduate pharmacist or by a department store clerk who does not know arsenic from indigo." Thus wrote J. H. Droge in the *Pharmaceutical Era*. His words apply well to some remedies used by physicians and it requires little knowledge to prescribe these remedies.

The Best General Liniment.—Looking over the whole field of such preparations, and having used it in practice for over thirty-five years, the *National Druggist* declares the following to be the best liniment for general use:

℞.	Glacial acetic acid.		
	Oil of turpentine, āā	ʒi	30
	Yolk of one egg.		
	Water q. s. ad	ʒviii	240

Mix the oil of turpentine, yolk of egg and acetic acid by shaking vigorously together. To the resultant emulsion add the water, a little at a time, shaking well after each addition. Of course, this must not be used on an inflamed surface.

Tobacco and Audition.—According to Delie (*Revue Hebdomadaire de Laryngologie*), tobacco has a direct action on the auditory nerve, producing a trophoneurosis by its action on the circulation through the sympathetic. Like other toxic neurites it is progressive, affecting both ears simultaneously without affording any objective symptoms. He specially advises caution in the use of tobacco by those subject to weakness of audition or ear disease, or those predisposed to arteriosclerosis by heredity, all the more so the younger the patient. L. Schott of Nauheim has observed arterial sclerosis in smokers of fifteen years of age, and Wyatt-Wingrave has found eight cases of nervous deafness among patients aged between twenty-four and forty years.

Tuberculosis Mortality in Paris.—Tuberculosis is the cause of between 12,000 and 13,000 deaths per annum in the city of Paris, or about a quarter of the total mortality. Ferdinand Marie-Davy (*Journal de Hygiene*) reports a study of the subject with special reference to the density of population in the different sections of the city and also with special reference to the ventilation, using the number of doors and windows per each house dweller as an index. The proportion of deaths from tuberculosis ranges from 1.3 per 1,000 in the eighth *arrondissement*, where the proportion of doors and windows is 4.2 for each inhabitant, to 8.2 per 1,000 in the twelfth *arrondissement*, where there are only 1.8 doors and windows per inhabitant. This proportion of doors and windows is in accordance with a certain interior space and therefore affords an index to the overcrowding of the population as well as to the ventilation. The importance of these factors in the mortality from tuberculosis is sufficiently evident.

Disadvantages of a Large Practice.—According to the *St. Louis Medical and Surgical Journal*, a large practice cuts the physician off from opportunities of perfecting himself, and even of keeping abreast of the times. He also sacrifices all kinds of social pleasures, and is apt, in due time, to be worked to death. Beside this, he neglects his patients by giving each insufficient time, in addition to being less competent than he would be did he devote some time to study. This results in faulty diagnosis, imperfect treatment, and bad general results. Such an individual will find it increasingly difficult to get and retain new patients, although likely to hold his old ones, meanwhile gradually descending along that inglorious path that leads him into the valley of the much pitied class of "mossbacks." Practice is likely to steadily diminish. Finally he realizes that he has neglected to continue his studies, and that he must start out afresh to get a new lease on practice. It is no longer the obtaining of a large practice, but rather of a good one, that is the object. Medical men are gradually beginning to realize that a large practice is a great disadvantage. Many look on it as a boomerang, and raise their prices for the purpose of lessening their work without diminishing their pay.

Anesthesia by the Rectum.—In 1847 Pirogoff demonstrated that general anesthesia could be produced by the introduction of ether vapor into the rectum. More recently another Russian surgeon, A. V. Krougilitch (*Voyenno Medicinsky Journal*) has experimented with the method and claims that it has decided merits. The patient quickly comes under the influence of the vapor sufficiently to permit of major operations being performed. Occasionally, however, the anesthesia is insufficient, then he supplements it with a few whiffs of chloroform, repeating it in minute doses as required. Rectal anesthesia is, he says, the method of choice for operations on the head and neck and he advises it also for other operations on account of its comparative safety, except in cases where it is contra-indicated by inflammatory conditions of the intestines, peritonitis, etc. He precedes the administration, after a cathartic has taken effect, by washing out the intestines, followed by a general bath, and uses a special apparatus permitting the outflow of the liquid formed by the condensation of the ether vapor. There is at first a slight intestinal irritation or tenesmus lasting only two or three minutes. There is rarely any preliminary excitement and only slight and transitory reactive phenomena.

The Physician's Hardest Problem.—In beginning his career the young physician finds his hardest problems to be those of diagnosis and treatment. But as the years give him opportunities for observation and experience he begins to realize that the problems of disease *per se* are as nothing compared with those presented by each individual patient's habits, character and disposition. In his college course he is taught to regard each disease as a pathologic entity. In his practice he finds that few diseases present classical aspects and that pathologic conditions are almost invariably modifications or variations of a type. When a physician awakes to this all-important fact his real usefulness as a practitioner of medicine just begins. From now on he will individualize his cases and adapt his treatment to conditions as he finds them in each patient. He will recognize, therefore, how important a bearing habits, disposition and environment, to say nothing of heredity, have on the symptoms of the disease he is called on to treat, and henceforth, if he is wise, he will treat his patients and not their disease. It is easy to give drugs for each ailment, but it is not easy to correct the errors of diet, hygiene, etc., the influences of temperament and of environment that modify each disease. Herein lies the physician's hardest problem.—*Vermont Medical Monthly.*

Delivery of Twins with an Interval of Seventeen Days.—Pauplin reports the case of a married woman of twenty-five who was delivered of a living child, and soon thereafter of a normal placenta, during the eighth month of her second pregnancy. A second fetus was distinctly palpable, its heart sounds being clear and loud. Some soft tissue could be felt in the vagina, and adjoining it on the left a cervix was found, comparatively hard and firm, its external orifice being partially closed. The examining finger could not pass through the cervical canal. Labor pains stopped completely, and the woman went to sleep. The next day no uterine contractions could be observed. There were no lochia nor any signs of the secretion of milk. Nine days later the patient left the bed. Sixteen days after the delivery of the first child the membranes of the other fetus ruptured suddenly, and the next morning another living child was born. The placenta was shortly afterward expelled. Like the first, the second puerperium took an absolutely normal course. This time the breasts soon became engorged, and milk was secreted in sufficient quantities for both children. An examination a few weeks later showed that the uterine cavity was divided into two sections by a broad septum, the presence of which was ascertained with the uterine sound. On palpation the uterus did not show any anomalies.—*Interstate Medical Journal.*

The Remedy for Fraud in Medicine.—We must reform our ways. We must cultivate the highest ethical (and that means moral) standard, so that we shall be looked on as the first refuge in the hurricane of greedy selfishness that is overwhelming society since the era of the captain of industry began. Be pure and clean; think, feel, act and speak only from the most disinterested motives; and the time will not be long when the world will recognize your worth and trust you as you deserve. Nothing is so urgently needed to-day as men who are worthy of confidence. We must improve our methods of treatment. We must use better remedies, and must apply them more intelligently. We must study our cases better, must learn to recognize the pathologic conditions, rather than to name the diseases. We must learn to know our remedies, and to see the precise indications for the use of precise remedial agents; and to recognize the effect of these so that we use neither too little nor too much, but just enough to accomplish our definite, well-considered purposes. Guesswork and chance must be eliminated from our practice. We must be prepared to use that most impressive branch of our art, prognosis, so as to teach our patients our mastery of the case in a way no pretender can possibly do. These are the things that make for better physicians, and we can not afford to be turned aside from anything that tends in that direction, by the sneers of self-interest or arguments addressed to prejudices, that do not touch the merits of the question. And if there be any other or better methods of opposing quackery I know of them not.—W. F. Waugh, in *Alkaloidal Clinic.*

Tabes and Virility.—G. Milian (*Archives Generales de Medecine*) reports the results of a study of twenty-six tabetics, twenty-one men and five women, with special reference to their reproductive capacity and heredity. (Luetic infection was proved in twenty-one cases. The total percentage of syphilis was 88.46. This nearly agrees with that of Fournier of 90 per cent.) Milian finds that the majority of these patients preserved their virile power intact. In a few it was impaired and very rarely was there complete impotence, which was chiefly observed in cases where there were vesical symptoms. The fecundity seems to be diminished, as the number of sterile marriages was large. This, as well as the great mortality among the children, he attributes to the pre-existing syphilis rather than to the tabes itself. Most of the cases reported as hereditary tabes have been cases of Friedreich's disease. Cases of undoubted hereditary tabes occur (Remak, Babinski) but are extremely rare. This small proportion as compared with the much larger one of cases of juvenile tabes in children of syphilitic parents suggests the probability of hereditary syphilis being the direct cause. The proportion of children of tabetics affected with nervous diseases is large but no more so than in cases of children of syphilitic parents; and hereditary syphilis may be assumed as the probable cause and not specially aggravated by the later occurring tabes. The conclusion he considers is not absolutely definite but one that may be modified by a more extensive research. It is rather a notable fact, however, that Pitres found a larger proportion of still-born and prematurely dying children among those born of subsequently tabetic parents than among those born after the appearance of the tabetic symptoms, and Milian's figures accord with those of Pitres.

Taxing Cripples.—The New York legacy tax law is characterized by *Charities* as a tax on the lame, the halt and the blind. It is not the institution as a co-operative entity which suffers from the tax, but the beneficiaries of the institution. "It will be remembered that in the case of the federal war revenue tax law, a similar situation was presented and the action of Congress in repealing the tax on benevolent institutions and in refunding all taxes paid by such institutions may be recorded as indicative of the general opinion on the subject, and of the force of the reasons against such taxation in their effect on clients disposed to leave their property to public institutions —institutions which save the state great expense in the care of certain classes. The policy to exempt legacies to such institutions from such succession taxes has been adopted and is in force in Maine, Massachusetts, New Jersey, Virginia, Ohio, Illinois, California and other states. That the New York law is absurd is shown by a glance at its operation. A legacy to a tract society is exempt, a legacy to a hospital is subject to taxation; property left to a bishop—even for his own personal use—is exempt, to a charitable society is subject; a legacy of less than $10,000 left to a relative is exempt, a like amount left to an educational institution is subject to the full tax." The court of appeals, in construing the act in a certain case, called the act "an assault on charitable transfers," and said: "The organized charities and benevolent agencies which actually relieve human misery, and labor in unselfish devotion to improve the moral and physical condition of mankind, are alike the fruits and aids of good government, and to exempt their property—usually gifts of the benevolent—from the burdens of taxation is scarcely less the duty than the privilege of the enlightened legislator. Clearly this exemption should be placed on broad, equitable grounds."

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS will not be noticed. Queries for this column must be accompanied by the writer's name and address, but the request of the writer not to publish his name will be faithfully observed.

TOTAL REMOVAL OF A LUNG.

NEW HAVEN, CONN., April —, 1905.

To the Editor:—Where can I find literature and histories of removal of lung for empyema? Are there any cases on record of complete removal of one lung? CHARLES R. MITCHELL.

ANSWER.—An entire lung has not been successfully removed from man, but it has been removed experimentally from animals. A very extensive bibliography of the subject is found in Rickett's "Surgery of the Heart and Lungs," published by the Grafton Press, New York City, 1904, price $5.

State Boards of Registration

COMING EXAMINATIONS.

New York State Homeopathic and Eclectic Boards, New York, Albany, Syracuse and Buffalo, May 16-19. Chief of Examinations Division, Charles F. Wheelock, State Capitol, Albany.

Board of Medical Examiners of the State of North Carolina, Greensboro, May 17. Secretary, George W. Pressly, M.D., Charlotte, N. C.

The Nebraska State Board of Health, Lincoln, May 31 and June 1. Secretary, George H. Brash, M.D., Beatrice.

Minnesota State Board of Medical Examiners, Old State Capitol Building, St. Paul, Minn., June 6-8. Secretary, C. J. Ringnell, M.D., Minneapolis.

Board of Medical Examiners of Wyoming, State Capitol, Cheyenne, June 7. Secretary, S. B. Miller, M.D., Laramie.

Michigan State Board of Registration in Medicine, The Capitol, Lansing, June 13. Secretary, B. D. Harison, M.D., Sault Ste. Marie.

State Board of Medical Registration and Examination of Ohio, Cleveland, Columbus and Cincinnati, June 13-15. Secretary, Frank Winders, M.D., Columbus.

Board Representing the President and Fellows of the Medical Society of Delaware, Dover, June 20-22. Board Representing the Homeopathic Medical Society of Delaware, Wilmington, June 20-22. Secretary of the Medical Council of Delaware, P. W. Tomlinson, M.D., Wilmington.

State Board of Medical Examiners of New Jersey, Trenton, June 20-21. Secretary, E. L. B. Godfrey, M.D., Camden.

Medical Examining Board of Virginia, Richmond, June 20-24. Secretary, R. S. Martin, M.D., Stuart.

Board of Medical Examiners of Maryland, Baltimore, June 21-24. Secretary, J. McP. Scott, M.D., Hagerstown.

Medical Council of Pennsylvania, Philadelphia and Pittsburg, June 27. Secretary of the Medical Council, H. C. Shaeffer, M.D., Harrisburg.

Rhode Island April Report.—Dr. G. T. Swarts, secretary of the Rhode Island State Board of Health, reports the written examination held at Providence, R. I., April 6 and 7, 1905. The number of subjects examined in was 7; total number of questions asked, 70; percentage required to pass, 75. The total number examined was 9, of whom 5 passed, and 4 failed. The following colleges were represented:

PASSED. College.	Year Grad.	Per Cent.
Harvard University ..... (1901) 84;	(1904)	82
Yale University	(1903)	90.2
University of Pennsylvania	(1904)	86.6
Baltimore Medical College	(1900)	78.1
FAILED.		
Maryland Medical College	(1904)	72.4
University of Vermont	(1898)	73.7
Baltimore Medical College	(1904)	68.1
Kentucky School of Medicine	(1904)	70.1

Minnesota April Report.—Dr. C. J. Ringnell, secretary of the Minnesota State Board of Medical Examiners, reports the written examination held at St. Paul, April 4-6, 1905. The number of subjects examined in was 12; total number of questions asked, 95; percentage required to pass, 75. The total number of applicants examined was 17, of whom 13 passed and 4 failed. The following colleges were represented:

PASSED. College.	Year. Grad.	Per Cent.
Toronto University	(1896)	79.9
McGill University	(1882)	75.55
Laval University	(1904)	76.8
Hamline University	(1903)	75.55
Washington University	(1904)	77.55
Jefferson Med. College	(1893)	83.8
University of Michigan	(1901)	75.2
College of P. & S., Chicago (1902) 82.45;	(1904) 75.35, 78.8,	78.7
Rush Med. Coll ..... (1882) 82.45;	(1902)	88.1
FAILED.		
Hamline University	(1904) 72.6, 67	
Keokuk Med. Coll	(1884)	66.65
College of P. & S., Chicago	(1904)	73.5

The following questions were asked:

MEDICAL JURISPRUDENCE.

1. Define viability; at what period of pregnancy is it usually manifest? 2. In death of a mother from suspected abortion, what postmortem condition of the genitalia would corroborate this suspicion? 3. What symptoms and postmortem conditions would lead you to search for strychnia in the stomach? 4. In a case of drowning, what postmortem conditions would you expect to find? 5. In a case of death from hydrocyanic poisoning, what symptoms and postmortem condition would obtain?

THEORY AND PRACTICE.

1. Define chorea and give treatment. 2. Give general treatment for acute eczema. 3. Define gout; give prognosis and treatment. 4. Give symptoms and prognosis of chlorosis. 5. Give symptoms and diagnosis of cerebral abscess. 6. Give etiology and diagnosis of cardiac dilatation. 7. Give etiology and prognosis of gastric hemorrhage. 8. How would you manage a case of acute appendicitis? 9. Give etiology and treatment of progressive pernicious anemia. 10. Diagnose acute pleurisy with effusion from pneumonia and empyema.

SURGERY.

1. How should a patient be prepared for the administration of ether or chloroform? 2. Describe traumatic fever, its causes and symptoms. 3. What are the peculiarities of a chronic ulcer; how should it be treated? 4. What are the symptoms and what the treatment of acute prostatitis? 5. Treat a case of fracture of the femur in a child. 6. What is necrosis, its causes, symptoms and treatment? 7. Describe a case of hematocele and the treatment of same. 8. What are the symptoms of stone in the urinary bladder? 9. How would you treat ankylosis? 10. What are the various dislocations of the humerus and the methods of effecting a reduction?

DISEASES OF CHILDREN.

1. Give differential diagnosis between ilocolitis and cholera infantum. 2. Give symptoms and treatment of empyema. 3. Give symptoms of acute anterior poliomyelitis; also differentiate fully from multiple neuritis. 4. Give the early symptoms and usual course of hip-joint disease. 5. How would you usually manage and treat a severe case of chorea in a girl 8 years old?

OBSTETRICS.

1. Give differential diagnosis between pregnancy; ovarian systoma; ascites; myoma. 2. Give anatomic differences between male and female pelvis and their significance. 3. Describe the normal mechanism of labor. 4. What conditions cause antepartum hemorrhage? How is it treated? 5. Describe your method of applying the forceps high; low? 6. How do you guard against rupture of perineum? Treatment if it occurs. 7. What is Cesarean section? When used? 8. What is postpartum hemorrhage? How treated? 9. How do you manage third stage of labor? What precautions do you use to prevent infection of mother? Of child?

DISEASES OF WOMEN.

1. Give symptoms and diagnosis of fibroid tumors of the uterus. 2. What are the principal diseases and symptoms of the female

generative system caused by gonorrhea? 3. Give treatment, mechanical and surgical, of retroversion of the uterus. 4. Give causes and symptoms of pelvic hematocele. 5. Give symptoms and treatment of cystitis in women.

MATERIA MEDICA AND THERAPEUTICS.

1. What is the physiologic action of a full dose of atropin? 2. Name the principal drugs whose continued use is liable to produce a drug habit. 3. What is the physiologic action of saline purgatives? Name two, with dose of each. 4. Prescribe an ointment for a case of scabies in an adult. 5. What is wrong with this prescription? R Sodii boratis, dram j; tinct. myrrhæ, oz. ij; aquæ q. s., ad oz. iv; misce et solve. Sig.: Use as a gargle. 6. Name the three best cardiac tonics, giving the preparation and dose of each. 7. Give a single dose for an adult, a dose that will be effective yet not dangerous, of each of the following: Extract of nux vomica; yellow mercurous iodid (protiodid); phenacetin; extract of aloes; codein. 8. How would you treat scurvy in a child of eighteen months? 9. What hypnotic would you use for an adult? Give dose. 10. What may the diabetic eat and what should he avoid?

CHEMISTRY, TOXICOLOGY, URINALYSIS.

1. What substances cause explosion when mixed with potassium permanganate? 2. Give chemical test for determining the presence of lactic acid in stomach contents. 3. Give treatment of acute carbolic-acid poisoning. 4. What abnormal constituents are found in the urine in nephrolithiasis? 5. Name four (4) proteids of the blood found in the urine in various pathologic conditions of the kidneys, the blood, or the system at large.

ANATOMY.

1. Describe the greater trochanter of femur, name muscles attached to it. As a landmark, how is it found? 2. Describe the elbow joint, briefly, and name ligaments in formation of same. 3. Name the muscles that bring about the movement of circumduction of the thumb. 4. Give collateral circulation around the scapula, after ligature of the third part of the subclavian artery. 5. In making an incision through the abdominal wall at McBurney's point, what structures are incised, and give direction of muscular fibers of each muscle. 6. In the operation for stretching the median nerve, at what point is it reached, and give relations. 7. In Pott's fracture, name bones that may be involved. 8. Give sensory nerve supply of the anterior surface of the thigh. 9. Name the openings of the orbit and their contents. 10. Make a diagram of the abdominal region and indicate the principal anatomic landmarks.

PHYSIOLOGY.

1. What part, if any, do the lacteals play in the absorption of proteids? Of fats? Of sugars? 2. Where do white corpuscles originate, and where are they finally destroyed? 3. What are polysaccharids? Name one, and give its chemical formula. 4. Name and describe two of the most important proteids of the blood plasma. 5. Trace the various steps in the digestion of a bolus of food containing albumen, fat, sugar and starch. 6. Tell how urea is formed, and how and by what channel excreted. 7. What is the function of the cerebellum? Medulla oblongata? 8. Describe and locate the spleen, giving its physiology. 9. From what center are the vasomotors controlled? 10. Give a brief description of the portal circulation.

EYE AND EAR.

1. Define: Astigmatism, hyperopia, myopia, heterophoria, heterotropia. 2. Give test for color sense. 3. Give varieties, diagnosis and treatment of purulent conjunctivitis. 4. Name three (3) diseases of the eye occurring in diabetes mellitus. 5. Give cause, symptoms and diagnosis of acute otitis media.

HISTOLOGY AND PATHOLOGY.

1. Describe following varieties of epithelium and state where found: Pavement, columnar, ciliated. 2. Describe red and white blood corpuscles; give function of each. 3. Give histology of striated muscle. 4. Differentiate serous and synovial membranes; state where found. 5. Name and describe the glands found in mucous membrane. 6. Describe structure of the aorta and pathologic changes in arteriosclerosis. 7. What is the result of admitting air into the veins? 8. Differentiate fatty degeneration and fatty infiltration; give cause of each. 9. Define tumor; give classification. 10. Describe briefly the pathologic changes taking place in acute lobar pneumonia.

The Public Service

Army Changes.

Memorandum of changes of station and duties of medical officers, U. S. Army, week ending May 6, 1905:

Borden, W. C., surgeon, detailed to represent Medical Department at meeting of Interstate National Guard Association, at St. Paul, Minn., June 19, 1905.

Duncan, Wm. A., Bruns, Earl H., and Gibner, Herbert C., asst.-surgeons, appointed first lieutenant, asst.-surgeons, to rank from May 1, 1905.

Raymond, H. I., surgeon, leave of absence extended two months.

Ekwurzel, Geo. M., asst.-surgeon, left West Point, N. Y., with cadets, en route to Gettysburg, Pa., for field exercise.

Roberts, Ernest E., contract surgeon, granted three months' leave of absence, in the United States.

Hutson, T. Ogier, contract surgeon, ordered from Beaufort, S. C., to Fort Oglethorpe, Ga., to accompany the Third Squadron, Seventh Cavalry, to Philippine service.

Adair, George W., contract surgeon, left Fort Wadsworth, N. Y., and arrived at Fort Banks, Mass., for temporary duty.

McCall, James H., contract surgeon, arrived at Fort Howard, Md., for temporary duty; granted leave of absence for twelve days.

Navy Changes.

Changes in the medical corps, U. S. Navy, for the week ending May 6, 1905:

Dunn, H. A., asst.-surgeon, ordered to the *Terror*, May 1.

Huntington, E. O., surgeon, detached from the Naval and Marine Recruiting Stations, Chicago, Ill., and ordered to the *Albatross*.

Thompson, J. C., P. A. surgeon, detached from the *Albatross* and ordered home to wait orders.

Moore, J. M., P. A. surgeon, ordered to duty at the Naval and Marine Recruiting Stations, Chicago, Ill.

Wheeler, W. M., surgeon, ordered to the *Cleveland*, sailing from New York about May 10.

Holcomb, R. C., P. A. surgeon, detached from the *Cleveland* and ordered to the Naval Station, Culebra, W. I.

Angeny, G. L., P. A. surgeon, detached from the Naval Station, Culebra, W. I., and ordered home to wait orders.

Hammer, A., pharmacist, detached from the Navy Yard, New York, and ordered to the Army General Hospital, Fort Bayard, N. M., for treatment.

Brister, J. M., P. A. surgeon, detached from the Naval Hospital, Philadelphia, and ordered to the *Atlanta*.

Public Health and Marine-Hospital Service.

List of changes of station and duties of commissioned and noncommissioned officers of the Public Health and Marine-Hospital Service for the seven days ending May 3, 1905:

Vaughan, G. T., assistant surgeon general, relieved from duty in charge of the Bureau Division of Sanitary Reports and Statistics, and assigned to duty in charge of the Bureau Division of Marine Hospitals and Relief.

Eager, J. M., assistant surgeon general, assigned to duty in charge of the Bureau Division of Sanitary Reports and Statistics.

Carmichael, D. A., surgeon, granted leave of absence for fourteen days from May 12.

Woodward, R. M., surgeon, to proceed to Providence, R. I., for special temporary duty.

Robinson, D. E., P. A. surgeon, detached from the Marine Hospital, Port Townsend, Wash., and directed to report to medical officer in command, Port Townsend Quarantine, for temporary duty.

Currie, D. H., P. A. surgeon, to report to medical officer in command, Marine Hospital, San Francisco, for temporary duty.

Burkhalter, J. T., asst.-surgeon, bureau telegram of April 24, 1905, granting leave of absence for three days from April 27, 1905, amended to read two days.

Adams, F. B., acting asst.-surgeon, granted leave of absence for ten days from April 29.

Rosello, M. M., acting asst.-surgeon, granted leave of absence for twenty-three days from May 15.

Safford, M. V., acting asst.-surgeon, granted leave of absence for two days from April 30, 1905, under Paragraph 210 of the Regulations.

Gahn, Henry, pharmacist, to proceed to Washington, D. C., for special temporary duty.

Woods, C. H., pharmacist, granted leave of absence for thirty days from May 15.

Gibson, F. L., pharmacist, granted leave of absence for twelve days from May 6.

Health Reports.

The following cases of smallpox, yellow fever, cholera and plague have been reported to the Surgeon General, Public Health and Marine-Hospital Service, during the week ended May 6, 1905:

SMALLPOX—UNITED STATES.

District of Columbia: Washington, April 22-29, 1 death.
Florida: Jacksonville, April 23-30, 5 cases.
Illinois: April 22-29, Chicago, 21 cases; Danville, 3 cases.
Louisiana: New Orleans, April 22-29, 16 cases, 1 death; five cases imported.
Missouri: April 22-29, St. Joseph, 3 cases; St. Louis, 21 cases, 1 death.
Nebraska: South Omaha, April 23-30, 1 case.
New York: New York, April 22-29, 1 case.
Ohio: Cincinnati, April 21-28, 4 cases; Toledo, April 15-22, 1 case.
Pennsylvania: April 22-29, Altoona, 3 cases; infection imported. Lebanon, 3 cases; Steelton, 1 case; York, 13 cases.
South Carolina: Charleston, April 22-29, 4 cases.
Tennessee: Memphis, April 22-29, 9 cases.
Wisconsin: LaCrosse, April 15-22, 2 cases; Milwaukee, April 15-29, 6 cases.

SMALLPOX—FOREIGN.

Canada: Hamilton, April 20-27, 2 cases.
Chili: Antofagasta, Jan. 24-31, 1 death.
France: Marseilles, March 1-31, 1 death; Paris, April 8-15, 29 cases, 1 death; St. Etienne, March 17-31, 1 case.
Great Britain: Hull, April 1-8, 3 cases; April 8-15, Southampton, 4 cases, 2 deaths; South Shields, 6 cases.
India: Bombay, March 28-April 4, 118 deaths; Calcutta, March 25-April 1, 11 deaths; Karachi, March 26-April 2, 8 cases; Madras, March 25-31, 7 deaths.
Italy: Catania, March 30-April 6, 3 deaths; Palermo, March 25-April 15, 46 cases, 4 deaths.
Russia: Moscow, March 25-April 8, 9 cases, 3 deaths; Odessa, April 8-15, 8 cases, 1 death.
Spain: Cadiz, March 1-31, 2 deaths.
Straits Settlements: Singapore, March 11-18, 2 deaths.
Turkey: Constantinople, April 8-16, 6 deaths.

YELLOW FEVER.

Mexico: Coatzacoalcos, April 8-15, 1 case, 1 death.

CHOLERA.

India: Calcutta, March 25-April 1, 71 deaths.

PLAGUE.

Africa: Cape Colony, March 18-25, 3 cases, 1 death.
Arabia: Aden, March 31-April 7, 11 cases, 10 deaths.
Chili: Antofagasta, March 1-28, 1 case; Arica, March 27, 3 cases; Pisagua, to March 21, 133 deaths; Valparaiso, March 31, 1 case.

India: Bombay, March 28-April 4, 681 deaths; Calcutta, March 25-April 1, 719 deaths; Karachi, March 26-April 2, 168 cases, 155 deaths.
Peru: March 26-April 2, Chiclayo, 7 cases, 4 deaths; Eten, 1 case; Lambayeque, 1 case; Chepin, 3 cases, 3 deaths; San Pablo, 1 death; Mollendo, 16 cases, 3 deaths; Lima, 1 case, 2 deaths.

Medical Organization

THE STATUS OF ORGANIZATION IN MISSOURI.

By J. N. McCormack, M.D.

Chairman of the Committee on Organization of the American Medical Association.

BOWLING GREEN, KY.

In making an extended itinerary in Missouri, carefully planned by the council and covering every geographical division of the state, an opportunity was given for a close study of professional affairs, and the causal conditions producing and modifying them. In a state with practically unlimited agricultural and mineral wealth, with a total population of 3,500,000, over 6,000 physicians, and with soil, products and material development as varied as it is possible to imagine, problems were presented in medical sociology as complex and interesting as those found in any other state I have visited.

There is a sense in which Missouri is a newer state than the bare facts of its history would indicate. It is only in recent years, comparatively, that its great natural wealth has been fully understood, and since then the development has been by leaps and bounds. The medical profession has had its full share of this growth, as indicated by the abundant representation in it from every section and country, and the over-supply of medical schools within its own borders. The proper assimulation of such a rapidly accumulating and diverse professional material would have been difficult under any circumstances, and but little effort was made in this direction. Two years ago the Missouri State Medical Association had but 258 members, less than 4 per cent. of the medical population, and but 14 of the 114 counties had even nominal local societies. It is true that there was a number of district societies overlapping each other in every direction, but in most of them the active membership was small, the meetings infrequent, and neither they nor the state body could claim to be representative of the profession, and they did not exert, or seriously attempt to exert, any great influence on its rank and file.

The results of these conditions were reflected in all professional affairs, but were most evident in regard to legislation and its enforcement. Fads and isms sprung up and flourished as they have not been able to do elsewhere, while the ordinary forms of quackery became more firmly entrenched, and were more brazen and blatant than in any other state in the Union, except it be in Illinois.

Within two years after the adoption of the new plan of organization the membership in the state association grew to 1,600, 70 county societies had been established, and, on the surface, the progress seemed great. On investigation, however, it was found that most of these societies had little existence except on paper, that few of the officers and councilors appreciated the responsibilities of their positions, the feeling seeming to be general that in some way the scheme would work itself out without special effort on the part of these leaders. It is true that the president, secretary, chairman of the council, and a few of the individual councilors, had done good work in a desultory sort of way, but others had done nothing, and there had been little of the systematic, comprehensive planning and effort which will have to be made before the profession of Missouri is organized.

I have been in no other state where the profession was more responsive to appeals for the new order of things, and with proper effort it would be comparatively easy, within the next few years, to build up real, vital scientific and business organizations which could be made helpful to each member in his everyday work, as is contemplated under the new plan, in almost every county in the state. This will require a careful study and treatment of the conditions in each county by the councilor. In this connection it may not be improper for me to say that the impression was made on me that the initiative of the individual councilors was not being relied on and developed here as in other states where the work is being done more successfully. This was well illustrated in the arrangements for the meetings called in my itinerary. The notices were sent from the secretary's office alone, where they should have been at least supplemented by letters from the individual councilors, making him, and he in turn making his county society officers, responsible for the success or failure of the meeting. The association officers, and the council as a body, should do more rather than less, but the execution of their orders should be more and more through the councilors, those being dropped or asked to resign who are not found equal to the tasks set for them. This is what organization means. To bring it all about will require much careful thought and self-sacrificing labor, but Missouri is so ripe for the work, and the returns to its profession and people would be so great, that it is worth all of these and more.

In Kansas City, Sedalia, Jefferson City, and probably other points not visited by me, there are now fairly effective organizations, and good material for similar ones were found almost everywhere. The leaders of the profession impressed me on this trip, as they always have heretofore, as equal to those of any other state or section, and it is urged that they can, should and will unite, and persist in this great work until it is accomplished. It is this hope and belief, and because I know that they will be received in the kindly spirit in which it is done, that these criticisms, which might otherwise seem harsh, are made.

Iowa.

SECOND COUNCILOR DISTRICT.—The convention of physicians of this district was held at Davenport April 25. There was an unusually large attendance and an interesting program was given. It was at first thought advisable to effect a permanent organization for the district and elect officers and formulate a constitution and by-laws, but it was later decided to form no permanent organization, but to allow officers of the county society, who were the hosts, to act as district officers for the session. This, it was thought, will be a more convenient method and will avoid the creation of unnecessary offices.

Society Proceedings

COMING MEETINGS.

AMERICAN MEDICAL ASSOCIATION, Portland, Ore, July 11-14, 1905.

American Association of Physicians, Washington, May 16-17.
Arkansas Medical Society, Little Rock, May 16-17.
Illinois State Medical Society, Rock Island, May 16-18.
Missouri State Medical Assn., Excelsior Springs, May 17-18.
Montana State Medical Association, Butte, May 17-18.
Iowa State Medical Society, Des Moines, May 17-19.
New Hampshire Medical Society, Concord, May 18-19.
Medical Society of the State of N. Carolina, Greensboro, May 23-25.
Connecticut Medical Society, Hartford, May 24-25.
North Dakota State Medical Society, Grand Forks, May 24-25.
American Gynecological Society, Niagara Falls, N. Y., May 25-27.
West Virginia State Medical Association, Wheeling, May 24-26.
Arizona Medical Association, Prescott, June 1-2.
Minnesota State Medical Society, St. Paul, June 1-2.
Rhode Island Medical Society, Providence, June 1.
American Laryngological Association, Atlantic City, June 1-3.
American Laryn., Rhin. and Otol. Society, Boston, June 5-7.
American Orthopedic Association, Boston, June 6-8.
Indiana State Medical Association, West Baden, June 7-9.
Maine Medical Association, Portland, June 7-9.
Wisconsin State Medical Society, La Crosse, June 8.
Amer. Assn. of Genito-Urinary Surgeons, Montreal, June 13-14.
Massachusetts Medical Society, Boston, June 13-14.

MEDICAL SOCIETY OF THE STATE OF CALIFORNIA.

Thirty-fifth Annual Meeting, held in Riverside, April 18-20, 1905.

The President, DR. FRANK L. ADAMS, Oakland, in the Chair.

Dr. William W. Roblee, president of the Riverside Medical Society, delivered an address of welcome. In the presidential address, Dr. Adams congratulated the society on the work that had been accomplished and urged the members to still greater effort.

The State Board of Health.

The principal address on the second morning was delivered by Dr. Newel K. Foster, Sacramento, secretary of the State Board of Health, on "The Hopes, Disappointments and Successes of the State Board of Health," in which he traced the course of the work of the board and referred especially to the care of consumptives in public institutions, the separation of consumptives from other patients and the open-air treatment.

Tuberculous Patients a Menace to Los Angeles.

Dr. George H. Kress, Los Angeles, read a paper in which he discussed the question of the tuberculous population of Los Angeles and the question of their menace to the health of those not so afflicted. He analyzed the vital statistics of the city and concluded that, despite the relatively low mortality, the preponderance of deaths from tuberculosis was a grave menace to the health of the city. He suggested as means of neutralizing these dangers, compulsory notification, a new and properly enforced ordinance regarding lodging houses, a municipal dispensary, and the establishment of a sanatorium for incipient cases and of hospitals for patients in advanced stages of the disease.

Good Reports Received.

The registration at the meeting reached 230, the largest number for several years. The society was reported to be in a very healthy condition; there are now about 1,700 members and almost every county society in the state has increased somewhat in membership during the year.

The committee on arrangements provided an automobile ride and a polo game for the members, a tea and a ride into the foothills for the accompanying ladies, and a banquet at the Glenwood on the evening of April 20, over which Dr. Ernest W. Fleming presided as toastmaster.

Election of Officers.

The election of officers resulted as follows: President, Dr. Robert F. Rooney, Auburn; vice-presidents, Drs. William W. Roblee, Riverside, and William T. Maupin, Fresno; secretary, Dr. Philip Mills Jones, San Francisco (re-elected); assistant secretaries, Drs. Walter B. Hill, Santa Clara, and Albion W. Hewlett, San Francisco; board of medical examiners, Drs. Abraham L. Cothran, Santa Clara, John C. King, Banning, George F. Reinhardt, Berkley, Dudley Tait, San Francisco, and Frank B. Carpenter, San Francisco; alternates, Drs. George E. Abbott, Pasadena, Ray L. Wilbur, Stanford University, and Andrew M. Henderson, Sacramento; delegates to the American Medical Association, Drs. Philip Mills Jones and Herbert Moffitt, San Francisco; committee on public policy and legislation, Drs. James H. Parkinson, Sacramento, George H. Evans, San Francisco, and H. Bert Ellis, Los Angeles. It was decided to hold the next meeting in Santa Clara.

MEDICAL ASSOCIATION OF THE STATE OF ALABAMA.

Fifty-eighth Annual Meeting, held in Montgomery, April 18, 1905.

The President, DR. CAPERS C. JONES, East Lake, in the Chair.

Dr. Isaac L. Watkins welcomed the association on behalf of the medical profession of Montgomery and Alderman John P. Cone on behalf of the city of Montgomery.

The Addresses.

In the annual presidential address, the president paid especial attention to tuberculosis, the Walter Reed memorial and the indiscriminate use of patent medicines.

The Jerome Cochrane lecture was delivered by Dr. Robert Abbe, New York City, on "The Problem of Surgery," in which, after a tribute to the late Jerome Cochrane, he sketched the progress of surgery, with especial reference to the qualifications of the successful surgeon and to the modern discoveries which had robbed surgery of many of its former terrors. He stated that the great problems of to-day are septicemia and cancer. In the latter disease, he spoke of the employment of radium, stated that it was potent in curing and arresting the disease, but that the great problem was the development of sufficient radio-energy.

Symposium on Tuberculosis.

The afternoon session was devoted to tuberculosis, with papers by Dr. Charles L. Minor of Asheville, on "Purposes and Plans of the National Association for the Study and Prevention of Tuberculosis"; Eli P. Smith, of the *Birmingham News*, on "A Layman's View of the Practical Side of Tuberculosis," and Dr. Edgar A. Jones, Raton, N. M., on "Some Essentials to the Successful Treatment of Tuberculosis." Mr. Smith advocated the appointment of a tuberculosis commission in Alabama similar to those established in other states for the study of the disease and the adoption and promulgation of means for its suppression.

The vice-presidents reported the progress of organization in the several counties and stated that during the year the increase in membership of the association has been 78, and that there were at that time 55 illegal practitioners in the state. In the northern district of the state there are still 325 practitioners who are not members of the association.

The papers read at this meeting were of excellent grade and were thoroughly discussed.

Election of Officers.

Dr. Eugene D. Bondurant, Mobile, was elected president; Dr. Louis W. Johnson, Tuskegee, vice-president; Dr. J. Buckner Killebrew, Mobile, councilor; and Dr. Vivian P. Gaines, Mobile, censor. Birmingham was selected as the next place of meeting.

BUFFALO ACADEMY OF MEDICINE.

Regular Meeting, held March 14, 1905.

DR. ALLEN A. JONES, Chairman, presiding.

Some of the Newer Problems in Diabetes Mellitus.

DR. ELLIOT T. JOSLIN of Boston, Mass., stated that there have been marked improvements in the treatment of this disease as is proven by the statistics of 172 cases treated in the Massachusetts General Hospital from 1824 to date. The tolerance of diabetics for carbohydrates can be increased by rest, which relieves the body of carbohydrates in food, blood and urine, so removing the carbohydrates from the body. It is just as important to give a diabetic rest as it is to give a gastric ulcer rest. This rest is obtained by a strict diet. Under ordinary conditions if a diabetic takes 100 gms. of bread he will excrete 20 gms. of sugar. If you increase the body tolerance by rest, the same amount of bread will give but 1-2 gms. in the urine. There are several methods by which this rest may be obtained: By restricting the carbohydrates in the food and in severe cases totally excluding the carbohydrates from the food.

If the restricting or diminution of carbohydrates does not diminish the sugar it is advisable to diminish the albumins in the meat. If still the sugar continues, then a vegetable day is urged, when the patient gets spinach, salads containing oil and alcohol. In some cases the sugar still does not decrease and then a starvation day is urged. This regulation of diet can be done only under the strictest supervision in a hospital or sanatorium. The change in diet must be gradual, for a sudden change from a carbohydrate to a starvation day might induce coma, and so when a return to the more liberal diet is made, it must be done gradually for the same reason.

He spoke first of placing the patient on cream, adding it gradually, day by day, until one-half pint is taken. Next the milk cure was mentioned, which was not recommended for all cases. Then the potato cure, which is not so good as the milk cure. The oatmeal cure recommended by von Noorden, which really is not strictly an oatmeal cure but consisted of 250 gms. oatmeal, 100 albumin, and 300 gms. butter, accomplished results in some cases. Suppose the patient is on a carbohydrate free diet, and is taking small quantities of cream, and there is no sugar in the urine, milk may now be added, day by day; later a little grape fruit and fruit can be given. If this does not satisfy, then potato may be added. Fat is essential in the diabetic, but it should be added gradually.

The author does not recommend the use of drugs. Drugs do not increase the body tolerance for carbohydrates, nor do they check the further progress of disease. He uses bicarbonate of soda to counteract the acidosis. When signs of coma appear, such as acetonuria, restlessness, increased thirst, etc., he gives a definite quantity of milk and bicarbonate of soda. If signs of coma increase, more milk and more bicarbonate of soda are added, but it is well not to give too much liquids because of danger of dilatation of the stomach. Give one

dram of bicarbonate of soda every hour, and after a few hours diminish the dose; the use of bicarbonate of sodium intravenously in well-marked cases of coma is useless.

DISCUSSION.

DR. CHARLES G. STOCKTON said the use of gluten and gluten bread in diabetics is harmful and is apt to lead us astray. He was glad to have heard of the danger of too suddenly changing from a carbohydrate to a non-carbohydrate diet but has not personally seen the changes referred to. The difficulty in diabetes is that the patient suffers from a carbohydrate hunger, for he can not utilize the carbohydrates taken, and carbohydrates are withdrawn from him. He, therefore, craves starches. Patients do better at one time on one dietary, and not so well at another. One patient will do well on potatoes, another will get worse. His experience with a milk diet and fruits has not been good.

It is true that drugs are useless in diabetes, but we must remember we are not treating the disease alone, but also the patient, and often the patient fares better by using drugs, although the progress of the disease continues. Dr. Stockton has seen patients approaching coma improve under rest, the use of alkalies, and free elimination; but once coma has developed under this treatment they may emerge from it only to sink into it again. There are certain factors which precipitate coma, such as sudden withdrawal of carbohydrates, fatigue, and mental trials.

DR. A. L. BENEDICT stated that in Buffalo diabetics existed probably in the proportion of 1-10,000. It is essentially a failure to transform the sugars of the body. He has used strontium and the salicylates in the treatment of diabetes.

DR. FRIDOLIN THOMA referred to the hereditary factor, one-third of the cases showing an hereditary tendency, and to the lesions in the pancreas and in the islands of Langerhans. He believes that exercise and fresh air will often diminish the sugar excreted.

DR. THOMAS G. ALLEN uses the salicylate of ammonium, and 1/100 grain of bichlorid of mercury. He believes in baths and moderate exercise.

DR. CLOWES believes that the question of diet is of great importance in the treatment of diabetes. Starvation is of importance so far as his chemical analyses have shown and in his examinations he has found that large quantities of proteids are also prejudicial. He called attention to individual idiosyncrasies to different kinds of food, and stated that it was possible to slowly adapt organs to different kinds of food.

DR. EDMOND BLAAUW recalled the teaching at the University of Amsterdam. He gives diabetics the soft portions of the bread, and never the crust.

DR. ALLEN A. JONES stated that the treatment of diabetic coma is its prevention. He has never seen a case which did not ultimately die. It is also of value in diabetes to increase the bodily resistance, and for this reason tonics, such as nux vomica, arsenic and the glycerophosphates are of distinct value.

Care of the Premature Infant.

DR. DE WITT H. SHERMAN reported the results of the incubators at the Children's Hospital. They have had twenty-nine cases, six of which died within twenty-four hours, and ten later. He reviewed the principal points of the lack of development of the premature. He dealt with the treatment under three heads: 1, Maintenance of body temperature; 2, judicious feeding; 3, general care. All the infants were out-patients. Thirteen had subnormal temperatures, 96 degrees or less, and eleven died. One, with a rectal temperature of 94, survived. His statistics showed the necessity of attending to the proper maintenance of temperature immediately after birth in order to prevent shock from chilling. Diluted breast milk is given almost immediately after admission, without apparent ill-effects. The amount is small, the interval short—day and night. Plain breast milk is given as soon as tolerated. Some of the infants were too weak to suckle, and were fed through the nose. Gastric lavage was not used, being too disturbing a procedure. He laid emphasis on pure air of proper humidity; on quiet and freedom from handling; on anointing rather than bathing, except in so far as absolutely essential for cleanliness; on the use of the fewest possible drugs, those used being mild cathartics and stimulants, and beef juice in place of iron.

The smallest infant received weighed 1 pound, 13 ounces. It died. The smallest surviving child weighed 2 pounds, 11 ounces. One babe developed scurvy on breast milk. He claims that a premature infant can develop as well as one born at full term, and that the old notion that a seven months infant is more liable to survive than an eight months infant is groundless. He gives oxygen, and keeps the infant in a moist atmosphere. To overcome the jaundice he gives 1/20 gr. calomel with milk of magnesia.

THE AMERICAN CONFEDERATION OF RECIPROCATING, EXAMINING AND LICENSING MEDICAL BOARDS.

Meeting held at Indianapolis, April 27, 1905.

The President, DR. W. A. SPURGEON, in the Chair.

The examining boards of the following states were represented: Ohio, South Carolina, New Mexico, District of Columbia, Wisconsin, Iowa, Kentucky, Indiana, Nebraska and Michigan.

Report of Committee on Uniform Entrance and Graduation Requirements.

The committee recommend that after July 1, 1905, the confederation shall only recognize such schools and colleges as require for admission, as a minimum, the diploma of a high school or its equivalent in credits, the same to be such number and character of credits as may be recognized by the superintendent of public instruction or by some legally established state examining board of the state in which said college may be situated.

Further, that the graduation requirements shall be a completed medical college course that shall have consisted of at least 4,000 hours, and at least 40 per cent. of said 4,000 hours shall consist of clinical and laboratory work. That no college shall be recognized that falls below this standard 20 per cent. in any one branch or over 10 per cent. in the total; the curriculum of studies to be that adopted by the Association of American Medical Colleges at Chicago April 10.

The report was adopted.

Report of Committee on Advanced Standing.

This committee reported:

First: That graduates, holding degrees of A.B., B.S., or equivalent qualifications from a reputable college or university may be given credits not exceeding one year; provided, that the curriculum of the college from which the applicant comes provides at least within 10 per cent. of the same hours of instruction in the same several branches as the school to which applicant applies; and, provided, such advanced standing is approved by a certified examiner of the state board of medical examiners in the state in which the medical college is located subsequent to the time that the applicant for time credits satisfied the professors in charge of the various subjects as to his proficiency in the subjects for which he seeks time credits.

Second: That in case of transfer of students from one medical school to another the dean of the recipient institution must secure an official statement from the school from which the student comes as to the latter's educational and moral status.

Third: That no student shall be advanced to a higher class in his own school or any other medical school, who has more than two conditions in his previous year's work, and these conditions must be passed off before the end of the school year on which the student enters. That is to say, that the conditions of the first year must be passed off before the end of the second year, and the conditions of the second year must be passed off before the end of the third year, but no student shall be permitted to enter the fourth year until all conditions of the third year shall have been removed.

The report was adopted.

Report of the Committee on Uniformity and Scope of Examinations.

The committee recommended the adoption of the following regulation covering examination for license, viz.: That all

candidates for license in state board examinations, in addition to other requirements, be required to pass a written examination consisting of one hundred questions, in the following subjects: Anatomy, including histology and embryology, 10 questions; general surgery, 10 questions; materia medica and therapeutics, 10 questions; medicine, 10 questions; obstetrics, 10 questions; pathology and bacteriology, 10 questions; chemistry, 5 questions; etiology and hygiene, 5 questions; physiology, 7 questions; neurology, 3 questions; gynecology, 6 questions; laryngology and rhinology, 2 questions; medical jurisprudence, 2 questions; physical diagnosis, 5 questions; ophthalmology and otology, 3 questions; pediatrics, 2 questions.

That an average of at least 75 per cent. of correct answers shall be required from each candidate.

The report was adopted.

Report of Committee on Modifications in Reciprocal Qualifications.

For the purpose of establishing medical reciprocity among the states composing it, the confederation agrees to the following propositions as a basis of reciprocal medical registration:

(A) As a prerequisite to reciprocal registration, the applicant therefore shall file in the office of the board of the state of which he is a licentiate such evidence as will enable the said board to certify that he is of good moral and professional character. In connection therewith as evidence of moral and professional character after graduation and licensure, each applicant shall present, from his former home, to the state board in which registration is sought, satisfactory evidence that he has been, for at least one year, a member in good standing of the county, state or national medical organization of the school or system of practice to which he belongs, and a certificate of recommendation issued to him by vote, at a regular meeting of the society in which his membership originated, that he is worthy of registration anywhere, and such certificate of recommendation may be treated as part of such appplication and considered in connection with the other evidence presented.

(B) Each applicant shall be required to furnish in addition to the evidence under (A) an affidavit that in good faith he has abandoned practice in the state from which he came and that it is his intention to become a permanent resident of the state in which such application is made.

(C) A certificate of registration showing that an examination has been made by the proper board of any state, on which an average grade of not less than 75 per cent. was awarded, the holder thereof having been at the time of said examination the legal possessor of a diploma from a medical college in good standing in the state where reciprocal registration is sought, may be accepted, in lieu of examination, as evidence of qualification. Provided, that in case the scope of the said examination was less than that prescribed by the state in which registration is sought, the applicant may be required to submit to a supplemental examination by the board thereof in such subjects as have not been covered, and, provided, that the applicant had been engaged in the reputable practice of medicine at least one year in the state issuing the certificate on which endorsement is sought.

(D) A certificate of registration, or license issued by the proper board of any state, may be accepted as evidence of qualification for reciprocal registration in any other state. Provided, the holder of such certificate had been engaged in the reputable practice of medicine in such state at least one year; and also provided, that the holder thereof was, at the time of such registration, the legal possessor of a diploma issued by a medical college in good standing in the state in which reciprocal registration is sought, and that the date of such diploma was prior to the legal requirement of the examination test in such state.

In qualification A it will be noted that evidence is required which may be furnished easily and without expense by any physician who is a member in good standing in the organizations of the system of practice to which he professes to belong, and, what is probably of still more importance, as quacks are nearly always migratory characters, it requires a character of evidence which they can never furnish.

Qualification B is a necessary safeguard against the abuse of the privileges of reciprocity, especially in the health-resort states, by a class of practitioners who desire to move in and out with the pleasure and health seekers. These requirements put the whole question of reciprocity on such a broad and comprehensive basis, as to seem to put them ultimately within the reach of all of the states.

Dr. Fred. C. Zapffe, secretary of the Association of American Medical Colleges, and Dr. W. J. Means, chairman of its judicial council, addressed the meeting, and suggested that in the future the confederation and the college association could accomplish much good by keeping closely in touch with each other, and by exchanging reports of inspection of colleges. Their suggestions were heartily endorsed by the confederation.

The boards of the following states were added to the membership of the confederation: South Carolina, New Mexico, District of Columbia and North Dakota.

NORTHWEST MEDICAL SOCIETY OF PHILADELPHIA.

Stated Meeting, held March 6, 1905.

The President, DR. ARTHUR P. HITCHENS, in the Chair.

SYMPOSIUM ON INFLUENZA.

Etiology and Diagnosis.

DR. G. MORTON ILLMAN stated that the disease was of very ancient record, being mentioned by Hippocrates as far back as 400 B. C., and particularly referred to the epidemics of 1847 and 1889-1890. He contrasted the theory of Pfeiffer, who regards it as due to a bacillus, with others, who say it is due to a toxemia, and expressed the belief that the latter was the result of the bacillus rather than the cause of the infecion. He described the bacillus, and discussed the etiology of the disease in general, as well as its diagnosis.

Influenza Complicating the Ear and Upper Air Passages.

DR. WILLIAM HITSCHLER considered first its relation to the ear, and stated that it might affect either the inner ear or the middle ear, involving either the drum membrane alone or the entire middle ear. It differs from the ordinary otitis media in that in the early stages of the condition there is a marked tendency to hemorrhage, which may be observed as punctate or diffuse ecchymoses on the tympanic membrane, or as bloody vesicles raised from its surface, sometimes extending beyond the confines of the membrane itself and involving the posterior superior wall of the external auditory meatus. The pain is more severe and is more likely to be present on pressure over the mastoid, and the symptoms of the tinnitus, deafness and discharge are intensified. The mastoid is much more likely to be involved than in other conditions, and the external attic is often the subject of purulent inflammation. The diagnosis between this condition and severe simple acute inflammation is very difficult, the prognosis is not as good, and the tendency to chronicity greater. In the upper air passages, in addition to the usual catarrhal signs, there are frequently whitish-gray patches due to necrosis of the larynx and trachea. Hemorrhage, in the shape of nose bleed or hemorrhagic laryngitis, edema of the larynx and pharynx and abscesses of the larynx and thyroid gland have also been observed. The recurrent laryngeal nerve is frequently affected and paresis of the soft palate are among the nervous symptoms. He referred to the tendency to sinus disease in these cases, and also to the fact that many of the cases get well without and many are assisted by appropriate treatment, still there are a certain number which result either in chronic sinusitis, or a transmission of the infective process to the orbital or cranial cavities, sometimes resulting fatally.

The Prognosis and Treatment.

DR. SAMUEL WOLFE stated that the prognosis must be considered (1) in relation to life, and (2) as to the liability to complications, on account of the fine field for infection, among the prominent being pneumonia, endocarditis, pericarditis, pleurisy and meningitis. He believed the season of the year has much to do with the complications, winter being particularly favorable to pulmonary involvement, and the summer and fall to gastrointestinal involvement. He stated that each epidemic is liable to have peculiar complications, and

believed that the individuality of the patient and management of the case has much to do with the duration of the attack, as well as the sequelæ. Among the complications following the condition, which he considered in detail, were influenzal pneumonia, catarrhal bronchitis, and the neurotic affections, such as neuralgia, hysteria and hypochondriasis. He believed that persons who have once had the disease are more liable to a second attack. The treatment should be directed (1) to the fever; (2) to the pain; (3) to the respiratory symptoms, (4) to the gastrointestinal and nervous symptoms.

DISCUSSION.

DR. LEWIS S. SOMERS referred to the increase in the number of operations for morbid conditions of the accessory sinuses during the last decade brought about by influenza. This winter he has seen about 15 to 18 cases of frontal sinus involvement, while in the last three or four years involvement of the maxillary antrum seems to be the prevailing condition. He referred to the fact that complications of the upper respiratory tract are comparatively rare in those cases that went to bed immediately at the onset of the condition. In many instances the severe headaches and trifacial neuralgias following influenza are the result of catarrhal conditions of the accessory sinuses, which theory was borne out by the fact that local treatment of these regions often removes the trouble. He did not regard the hemorrhagic form of otitis as peculiarly characteristic of influenza in Philadelphia, and, furthermore, felt that in many instances abnormal conditions of the sinuses were induced by improper douching of the nose.

DR. SWITHIN CHANDLER has observed many women with diseases of the tubes who stated that it had started with influenza.

DR. CHARLES LEE FELT has found very little difference in the middle ear conditions following influenza and other middle ear conditions, except the severity of the disease. He cited several cases following influenza, in which between the attacks the ears were perfectly normal..

DR. FRANK C. HAMMOND has also observed that the pelvic viscera may be influenced during the acute attacks. He had seen three cases, two in single women, both 18 years of age, who on the third day showed marked pelvic involvement. He referred to a case in which there was pain and rapidly increasing leucocytosis in which appendicitis was suspected, but exploratory examination showed the appendix to be normal. There was, however, pus in the abdomen, which was evacuated and drainage established. The woman made a good recovery.

DR. SAMUEL P. GERHARD referred to the selection of the various mucous membranes as the sites of complications attending or following influenza, and dwelt on the importance of producing elimination as quickly as possible.

DR. P. K. SCHWENCK referred to the fact that the ear complications following influenza are mostly unilateral. He believes that most of the severe headaches are due to sinus complications. He has had very few mastoid operations following influenza, and believes that involvement of this region is more frequently caused by other conditions. He emphasized the importance of rest in bed as a part of the treatment of influenza.

Therapeutics

[It is the aim of this department to aid the general practitioner by giving practical prescriptions and, in brief, methods of treatment for the diseases seen especially in every-day practice. Proper inquiries concerning general formulae and outlines of treatment are answered in these columns.]

Ringworm of Scalp.

In considering the treatment of ringworm of the scalp, T. Colcott Fox of London, in *The Practitioner*, states on examination, attention must be directed to any patches on the smooth skin, to a possible involvement of the nails and to the distribution in the scalp.

CUTTING THE HAIR IN PREPARATION.

The extent of this procedure must depend on the distribution and extent of the diseased areas, the age of the patient and his surroundings. Complete removal of all the hair is most satisfactory to prevent auto-inoculation.

The diseased areas should be marked out, taking care to locate any small commencing spots by painting with iodin or an anilin pencil. A proper inexpensive head covering should be worn night and day and all toilet articles used about the patient must be kept from other children and thoroughly disinfected. Excepting an occasional cleansing, the less the head is washed the better, as it does not assist in the cure and is apt to cause a scattering of the ringworm.

It is recommended by the author that some unirritating parasiticide such as carbolized vaselin or glycerin, be applied to the healthy surface. The use of the tincture of iodin combined as follows is recommended:

℞. Tinct. iodi ..... ℥i 30
Alcoholis (90 per cent.) ..... ℥iii 90

M. Sig.: To be applied locally to the scalp as directed three or four times a week.

Iodism seldom occurs, but in children sometimes it may cause restlessness and dreams. Under such circumstances the following may be substituted:

℞. Potass. iodidi
Iodi, āā ..... gr. iii 20
Aquæ ..... ℥iii 90

M. Sig.: Apply locally as directed.

He does not recommend long-continued applications of iodin or other chemicals, such as incessant washing with strong soaps, as they are apt to excite desquamation.

CHOICE OF REMEDIES.

The parasiticide can easily reach the fungus in the epidemic layers or small hairs except where a strong growth of hair exists, there it is difficult to make the preparation penetrate into the follicle sufficiently deep. On this account various methods have been used to assist in the penetration, such as the removal of the oil preliminary to the application of the parasiticide; combining the parasiticide with ether, chloroform, turpentine, glycerin, lanolin, etc.; the continuous application of the remedy under an impermeable head dressing; forcing it in by a special vacuum-producing apparatus and by means of cataphoresis. None of the foregoing methods will insure success, according to the author, in all cases on account of the great difficulty in penetrating to the depths of the follicle and to soak into the hair so as to come in close proximity to the fungus. Only in young children is it possible to effect a cure with a purely parasitic application.

The author mentions the following ointments which are so commonly used but which have not given proper results in his experience:

℞. Ung. acidi salicylici
Ung. sulphuris, āā ..... ℥ss 15

M. Sig.: Apply locally; or:.

℞. Ung. hydrarg. nitratis ..... ℥ii 60
Sulphuris sublim. 3i 4
Olei olivæ
Acidi carbol.
Ceræ albæ, āā ..... ℥i 30

M. Ft. unguentum. Sig.: Apply locally.

EPILATION.

Epilation, according to the writer, sometimes proves an invaluable aid to cure. He recommends a triangular glover's needle lightly coated with croton oil and inserted deeply into the follicles, observing care not to penetrate the skin. By this means the hair is loosened and is easily extracted. He is of the opinion that treatment with *x*-ray must dominate. It is painless and comparatively rapid and the danger of infection to others is overcome. The main obstacle to its use is the prolonged baldness. Setting up a local inflammation by means of drugs limited to the diseased follicles is sometimes used with the disadvantage that great discomfort and sometimes pain is produced, such as the use of strong iodin, formalin, and glacial acetic acid. The following is recommended by some authors:

℞. Hydrarg. iodidi rubri .....gr. iv-xv | 25-1.
Sol. sodii iodidi (1-4) q. s.
Spts. chloroformi .....ʒii-iv 8.-15
Aquæ q. s. ad.....ʒi 30

M. Sig.: Apply locally to the diseased areas.

Sheffield's treatment, as mentioned by the author, is as follows:

Apply to the entire scalp by means of a painter's brush once a day for five successive days, the following:

℞. Acidi carbol.
Olei petrolati, āā.....ʒii 60
Tinct. iodi
Olei ricini, āā.....ʒiii 90
Olei Rusci (German) q. s. ad.....Oi 500

M. Sig.: Apply once a day for five days.

On the sixth day wipe off with a rag dipped in plain oil, clip the hair again, wash thoroughly with green soap and with soft nail brush remove all scales and loose hair, and on the seventh day reapply the ointment.

When the new hair grows apply for a few days a 10 per cent. sulphur ointment and then the following:

℞. Resorcin
Acidi salicylici, āā .....ʒiv 15
Alcoholis .....ʒiv 120
Olei ricini q. s. ad.....Oi 500

M. Sig.: Apply locally.

He also mentions Fouli's treatment, which consists in: 1. Rubbing in spirits of turpentine to the patches for several minutes until it hurts. This should be followed by a rub with 10 per cent. carbolic acid soap and then warm water to make a lather. Dry the parts and apply two or three coats of iodin to the patches, and when this has dried, rub carbolized oil (1-20) over the entire head. This treatment should be carried out twice daily.

Chrysarobin is useful and can be applied in any strength desired to excite the proper amount of inflammation in each particular case, but it is criticised by the author as being dirty and stains. Formalin treatment has met with failure in his hands. It is painful and has a tendency to set up eczematous inflammation.

Of all the ointments the following are recommended by the author as capable of setting up the most desirable grade of inflammation without pus formation:

℞. Cupri oleatis .....ʒi-v 4.-20
Olei amygdalæ .....ʒii-iii 8.-12
Adipis lanæ hydros. q. s. ad.....ʒi 30

M. Ft. unguentum. Sig.: Apply locally; or:

℞. Hydrarg. oleatis .....ʒii-iiss 8.-10
Adipis lanæ .....ʒss-ii 2.-8
Acidi oleici q. s. ad.....ʒi 30

M. Ft. unguentum. Sig.: To be applied locally.

The foregoing ointments can be gradually increased and more vigorously applied until the desired results are obtained. Crusts should not be allowed to form.

Pus formation is a drawback and hindrance, and is liable to set up boils and lead to crust formation. In this connection he mentions the salt treatment, using it in equal parts with vaselin or stronger. It frequently excites pustular dermatitis, which is often effective and is of more service than castor oil.

CROTON OIL.

This is painless, except on inflamed spots, and the author regards it as most certain and effective, but requires care in its use, and must not be placed in inexperienced hands. Aldersmith recommends its use as follows: Rub one drop of croton oil into a patch and prevent its spreading to healthy tissue by surrounding the patch with carbolized lanolin (1 to 8). After four hours apply to the patch a soft, sticky, linseed poultice and cover with a piece of oiled silk. The poultice must remain fixed, otherwise it may cause the croton oil to spread. The following morning the patch should be bathed and all pus removed, followed by a new application of croton oil and poultice. The inflamed surface must be kept clean and free from pus. Keep up the inflammation by these applications until all diseased stumps have fallen out or have been extracted.

Lailler recommends that one drop of croton oil be applied to the spot and all excess removed. If the inflammatory action is severe and vesico-pustules form, he recommends the application of equal parts of tincture of iodin and alcohol (90 per cent.) on the following day to relieve the inflammation and to dry up the pustules. After three days the crusts should be removed by a moist dressing and thick crusts must be prevented. The croton oil should only be applied once in 12 or 15 days. Epilation of the stumps is of great value.

The author recommends the following ointment:

℞. Olei tiglii .....ʒi 4
Olei petrolati .....ʒi 30

M. Ft. ung. Sig.: Rub in daily or as often as is required to excite the desired degree of inflammation. This state is then maintained until all the diseased stumps are removed or have been epilated; keeping it clean and avoiding crust formation.

Tinea Tonsurans.

In the treatment of tinea tonsurans of children the *Medical Record* recommends that the hair be cut as close as possible once a week. Every third day the head should be washed with soap and warm water. Morning and evening the scalp should be massaged, triturating the diseased areas vigorously. Following the massage prolonged friction should be applied with the following application:

℞. Olei ricini
Tinct. cantharidis, āā .....ʒi 4
Spts. camphoræ .....ʒiv 120

M. Sig.: To be applied locally to the scalp.

Phlebitis.

The following combinations are of value in the treatment of phlebitis:

℞. Plumbi acetatis .....gr. xxx 2
Tinct. opii .....ʒiii 12
Aquæ .....Oi 500

M. Sig.: Apply locally on gauze to the affected area, or:

℞. Ung. belladonnæ .....ʒvi 24
Ung. zinci oxidi.....ʒi 30
Lanolini .....ʒx 40

M. Ft. unguentum. Sig.: Apply locally and wrap the limb in cotton wool.

Gingivitis (Inflammation of the Gums).

The following combinations are recommended by *Merck's Archives* in the treatment of gingivitis:

℞. Salol .....gr. xv 1
Spts. menth. pip. .....ʒx 40
Tinct. catechu .....ʒi 4

M. Sig.: One teaspoonful in half a glass of warm water as a mouth wash; or:

℞. Acidi carbol. .....gr. xx 1|30
Pot. chloratis .....gr. xx 1|30
Syrupi simp. .....ʒi 30
Aq. camphoræ .....ʒiii 90

M. Sig.: One dessertspoonful as a mouth wash diluted in half a glass of water.

Medicolegal

Medical Examination Not Indispensable in Rape Case.—The Supreme Court of Oklahoma holds, in Harmon vs. Territory, that a medical examination of the prosecutrix is not indispensable to warrant a conviction for the crime of rape.

Liability to Seaman Not Ended with Voyage.—The United States District Court, in Massachusetts, says, in the case of McCarron vs. Dominion Atlantic Railway Co., that it can not believe that the liability of a vessel and owners for the cure of an injured seaman is limited absolutely by the termination of the voyage; that, if the seaman is seriously hurt while anchoring the vessel in the harbor of destination, he may be abandoned by the captain without further help.

Care Incompetent Entitled To—Itemizing Account.—The Supreme Court of California says, in re Hayden's Estate, where the ward was an old lady, paralyzed, helpless and needing the care of a nurse at all times, and who had plenty of property to support her, that in such case it was the duty of the guardian and of the court to see that she had all the necessary comforts that could be supplied to her in her last days, even if it had taken the principal for such purpose. The court should not have allowed her to be deprived of suitable food, nursing, and medical attendance in order that the estate

left might be larger, or that some distant relative might be benefited. If she was not cared for by another party who had agreed to care for her, and the guardian gave her such care, his account would not be disallowed because such other party had made an agreement to care for her.

As to the contention that some of the charges contained in the guardian's account were not properly itemized, the court says that the only portion of the account called to its attention in the brief was for medical attendance. The items were as follows: "April 25, Dr. Harry, 20 visits, at $2.50, $50.00. September 4: Dr. Arthur, medical services, $70.00." The above charges were sufficiently itemized within the meaning of the statute. They showed the date of payment, the amount, the person to whom paid, and the nature of the services. It is not necessary that a bill of a physician should contain each item that goes to make up the charge. If the amount of the claim is disputed, or if it is denied that the services were rendered, the court on the hearing may go into the particulars.

Difficult Operation and Loss of Childbearing Power.—The Supreme Court of Appeals of West Virginia holds, in Normile vs. Wheeling Traction Co., that, in an action for personal injuries, where, as a result of such injuries, a surgical operation is necessary to be performed, evidence which shows or tends to show that such operation is attended with great difficulty and dangers, and that comparatively few physicians perform such operation, is admissible. It says that these facts would increase the expense of securing a physician to do the work, and, this being an element of damages which the plaintiff would be entitled to recover, it would alone make the evidence admissible. Then, again, to show that it was such an operation that but very few physicians would perform would go to show the difficulties attending its performance, and the gravity of it, which would also make the evidence admissible.

Furthermore, the court holds that it is not error to instruct the jury that the loss of childbearing power is an element of damage to be considered by them in an action for personal injuries sustained through the negligence of the defendant, when such loss is the reasonable and probable result of such negligent act. It says that the loss of the power of childbearing is certainly an element of damage to be taken into consideration by the jury, as much so as an injury to any other part of the human body, and the question as to whether or not the injury is the reasonable and probable consequence of the negligent act is a question of fact for the jury. So here it was for them to say whether or not the operation of laparotomy was made necessary by reason of the accident, and, if so, was the loss of childbearing the reasonable and probable consequence of such negligent act.

Questions and Answers as to Health.—The Supreme Court of Minnesota says that in the case of Rupert vs. Supreme Court of United Order of Foresters an applicant for life insurance was required to warrant not only her good faith as to her family history, but apart from construction, was made to guaranty opinions as to herself which no candid physician would be likely to assert with positiveness, and to insure against objective conditions which the company's own expert was unable to detect. Invariably, interrogatories of this kind are a medley of conclusions and facts. The answers called for are in part expressions of scientific opinion, and in part narrations of individual experiences. On its face, such an application requires the exact, literal truth as to ailments, the precise nature of which an operation in major surgery might not reveal, and which only an autopsy could discover. The questions are not scientifically arranged, so that the classes of diseases are mutually exclusive. A number of them are but "big bags to put many diseases in." It would require dialectical skill of no mean order to consistently interpret, and technical knowledge of no considerable extent to accurately answer, all that is thereby required. When the questions propounded to an applicant are in such terms as to include trivial ailments and injuries, unconnected with any specific disease, they should be interpreted as referring only to such ailments and injuries as affect the risk to be assumed, unless by express terms they preclude such interpretation. Answers which are purely expressions of opinion are warranties of the bona fide belief and judgment of the applicant. Questions concerning the physical condition of the applicant, or anything that tends to shorten his life, do not invariably require absolute truth in answering. An answer to a question concerning previous consultations of physicians which admits one examination, and omits others clearly proved, but does not purport to be a full and complete reply to all questions in that connection, and is accepted in its obviously incomplete form, is not affirmatively shown to have been false, so as to prevent recovery on the policy.

Hypnotism and Qualification of Expert Witnesses.—The Supreme Court of Iowa says that the connection of hypnotism with the case of State vs. Donovan, a prosecution for seduction, was merely a matter of evidence. It says that, according to the story of the prosecutrix, the defendant claimed to control her movements by what he termed "suggestions," and exercised hypnotic influence over her at different times. To prove his power in this direction and its nature, the trial court received, over objection, evidence of instances where he had operated on other subjects, and of the control exerted over them. This court knows of no other way by which such proof could have been made. The evidence was admissible. Again, the Supreme Court says that the jury were instructed to take into consideration, in connection with other evidence, "the testimony relating to the exercise or attempted exercise of hypnotic influence." This was proper, for, regardless of whether such influence was in fact exercised, the evidence tended to show that he was pretending to exert it on her, and thereby having some effect on her mind. Whether exercised by the accused, or only pretended was not very important, if in either event it was resorted to as a scheme or artifice to procure the debauch of the prosecutrix. Two physicians were called, and, as tending to establish their qualification to testify as experts on the use of hypnotism as an anesthetic stated—the one, that he was the superintendent of an insane hospital; had not made an extensive study of the subject, but knew, to a certain extent, what modern authorities said on the subject; had never practiced hypnotism, but had witnessed experiments by others; and the other, that he had made some study of the subject; had practiced it somewhat, and knew a few of the works recognized as standard authorities, but had never attended a school teaching hypnotism; there being but one in existence, located in France. The Supreme Court holds that there was no error in overruling an objection to their competency. It says that the inquiry related to matters connected with the profession of the witnesses, and, in order to testify concerning the same, they were not required to have derived their knowledge from actual experience or observation. Experts, as every one knows, obtain much of what they know from books, and may express opinions based thereon as well as on experience. Whether a person may testify does not depend on any well-defined standard by which his qualification to speak shall be measured. He should always possess such a degree of knowledge or skill as to enable him to speak intelligently on the subject, and, beyond this, in passing on the preliminary proof, much must of necessity be left to the discretion of the trial judge. These witnesses had studied the subject in different authorities, and were able to say from their investigation that surgical operations may be performed on patients in the hypnotic state; having been previously informed of what would be done, and that no pain would result.

Current Medical Literature

AMERICAN.

Titles marked with an asterisk (*) are abstracted below.

American Medicine, Philadelphia.

April 29.

1 *Adaptation and Tuberculosis. J. G. Adami, Montreal, Canada.
2 *Biliary Drainage in Operations on the Gall Bladder and Biliary Ducts. E. A. Smith, Buffalo, N. Y.
3 *Case of Fatal Chorea, Apparently from Excessive Muscular Action. J. P. C. Griffith, Philadelphia.
4 *Method of Uniting Intestines of Very Small or of Unequal Caliber. J. S. Horsley, Richmond, Va.
5 Briefs on Genitourinary Surgery. G. F. Lydston, Chicago.
6 *Intra-abdominal Anastomosis. A. Groves.
7 Pathogenesis of Lead Intoxication, Apropos of the Pathologic Findings in a Case. A. Gordon, Philadelphia.

1. **Adaptation and Tuberculosis.**—Adami emphasizes the fact that in infectious diseases in general, while the bacteria grow more particularly in one organ or tissue, the successful counteraction of the disease is not a local matter. The counteraction is by the rest of the organism; in part by the leucocytes developed in the bone marrow and elsewhere, in part by other tissues, which discharge into the blood diffusible antitoxic and bactericidal substances. He calls attention particularly to the recent observations of Wright and Douglas on the phagocytic activity of the leucocytes. These substances appear to be developed apart from the leucocytes, that is to say, by other tissues of the body. Applying these considerations to tuberculosis, he points out that when the tubercle bacilli grow locally, there is a slow diffusion out of their toxins, and it is by the adaption of the rest of the tissues to these toxins that the leucocytes and these other tissues become accustomed to produce diffusible antibacterial substances. In favorable cases these are present in amounts so considerable that the local growth of the tubercle bacilli is arrested and healing ensues. Postmortem observations show that this arrest is the rule rather than the exception. Applying these considerations to the treatment of tuberculosis, he shows, first, that the tuberculin treatment is but an attempt to carry out the natural process; that tuberculin is merely a concentrated extract of the toxins of the bacilli, and that these now are injected into the organism at a distance from the site of local growth of the bacilli. Their action must be to stimulate the cells of the rest of the organism, and to produce increased amounts of antibacterial substances. The cells, however, may be in a state of low vitality so that they do not react, and hence this treatment is by no means constantly successful. Modern treatment similarly, is a carrying forward of the same idea. The disease as such is left severely alone, every attempt is made to improve the general tone of the organism by rest, good food, and fresh air. The cells gain improved tone and respond to the toxins, producing increased quantities of the antitoxic and antibacterial substances. Here, again, it is the body as a whole and not the local reaction that brings about arrest of the tuberculous process. The adaptive processes on the part of the bacilli are next considered. They also are capable of being modified according to alterations in their environment so that by passage they are found to adapt themselves more and more to the organism of any particular species. By passage through the organism of one species, the bacilli become more and more virulent for that species and thus may become less and less adapted to growing the organism of another species. Adami is of the opinion that this is the case in general, and with tubercle bacilli grown in the human and bovine organisms, respectively, in particular.

2. **Biliary Drainage in Operations on Gall Bladder and Biliary Ducts.**—Smith says that biliary drainage, in the majority of cases, is best carried out by cholecystostomy, which is easier and safer than cholecystectomy. The latter is indicated for stricture of the cystic duct, in cases with thickened, distorted, perforated or gangrenous gall bladder, and when malignancy is suspected or found. Cholecystectomy should be accompanied by drainage of the cystic duct below the point of removal of the gall bladder. Patients suffering from the toxemia of cholemia long continued, should be offered exploratory operation and biliary drainage by cholecystostomy or cholecystenterostomy. Obstruction of the common duct by stricture and chronic pancreatitis may be treated with good hope of cure by this procedure, and in malignancy life is prolonged with comfort. The author describes at some length the technic of his operative work.

3. **Fatal Chorea Apparently from Excessive Muscular Action.**—Griffith reports an instance occurring in a boy 11 years of age. The child had had an attack of chorea two years before. The cause of the second attack was not known. A month before, he commenced to show restlessness, which advanced to choreic movements and grimaces. For a week the movements had been excessive. On admission to the hospital nothing abnormal could be found in the organs, except the presence of a systolic murmur in the mitral area. The boy could not speak, although he seemed to understand perfectly. The movements were so excessive that the child was thrown violently about the bed, and was bruised all over. Sleep was almost absent. Hyoscin hydrobromate given hypodermically relieved the condition to a certain extent, morphin, potassium bromid and chloral hydrate having been entirely ineffective. The excessive movements continued and exhaustion finally ensued, and death. The autopsy showed the presence of an endocarditis with micro-organisms in the heart muscle and in the mitral leaflets. While it can not be affirmed positively that death did not follow from endocarditis, yet the case bore all the evidences of death from exhaustion, the result of the enormous muscular activity.

4. See abstract in THE JOURNAL, Jan. 7, 1905, p. 58.

6. **Intra-abdominal Anastomosis.**—Groves advises the use of McGraw method, using silk instead of rubber ligatures, and is opposed to the use of antiseptics. The abdominal wound should be closed by the layer method. He urges drainage of the stomach by gastrojejunostomy in cases of gastric ulcer, irremovable pyloric cancer, dilated or displaced stomach, and believes that many cases of dyspepsia and so-called neurosis of the stomach can be cured by drainage. He contends that there are no functional, neurasthenic or neuralgic diseases, but holds that all diseases have an organic cause which usually can be found and often removed. Attention is directed to eyestrain as a commonly overlooked cause of intraabdominal derangements.

Medical Record, New York.

April 29.

8 *Multiple Myeloma (Kahler's Disease). J. Collins, New York.
9 *Let the Lungs Alone in Consumption. W. Hutchinson, Portland, Ore.
10 *Aerophagia and Flatulence. C. D. Spivak, Denver, Colo.
11 *Conduct of the Perineal Stage in Normal Labor. B. A. Fedde, Brooklyn, N. Y.
12 Case of Premature Separation of a Normally Situated Placenta. J. W. Robinson, Chicago.
13 Presentation of the Portrait of Dr. Fessenden Nott Otis to the Academy of Medicine of New York. L. B. Bangs, New York.

8. **Multiple Myeloma.**—For the purpose of showing that the occurrence of albumose in the urine is not pathognomonic of this affection, Collins cites a case in which repeated examinations of the urine failed to show albumose. A further point of interest in the anatomic side of the case was the extensiveness of the new growth, invading all the bones of the skeleton without the slightest indication of metastasis, although the disease had existed for over two years. Certain clinical features of the case are worthy of emphasis. In the first place, there was no deformity or alteration in the contour of the bones to be made out during life. Despite the fact that the substance of the bone was so largely replaced by new growth, and the existence of rarefying osteitis to a high degree, there were no indications that there had ever been fractures or dislocations. In the second place, the urine failed to show the albumose, as has already been mentioned.

9. **Let the Lungs Alone in Consumption.**—The reasons advanced by Hutchinson for letting the lungs alone in the treatment of consumption are: 1. Consumption, properly speaking, is not a disease of the lungs, but merely a local (pulmonary) expression of a disease which involves the entire system. 2. The lungs are practically beyond the reach of any known remedy. 3. In the vast majority of cases, so-called pulmonary gymnastics and the demands made by them on the lungs to expand beyond their natural limit, as is done in most methods where the air tension is artifically increased, as by breathing out against resistance, simply drive the infectious material into hitherto uninvaded areas of the lungs.

10. **Aerophagia and Flatulence.**—From a study of the literature and of his own cases, Spivak has arrived at the following conclusions: Swallowing of air in small quantities is a normal phenomenon. Abnormal swallowing of air may be voluntary (hysteria), and involuntary (dyspepsia, idiopathic). Air may enter the stomach by swallowing, aspiration, or gulping. Cases of aerophagia are not as rare as earlier writers used to think. Although this condition, as a rule, is a sequel to some other affection, yet when it is let alone it may, in its turn, produce grave symptoms and undermine the health. Aerophagia, tympanites, nervous eruptation,

pneumatosis, and merycism have an etiologic relationship. The best treatment in voluntary aerophagia is to impress the patient with the fact that he can stop it, if he will.

11. **Conduct of Perineal Stage in Normal Labor.**—Fedde describes a method devised by Dr. A. B. Davis to be employed in forceps cases. It consists in aresting the progress of the head by direct pressure when the biparietal diameter has passed the ischiopubic rami and before it has reached the rima pudendi; then, by gentle manipulations with the other hand—thumb and fingers on the opposite side of the vulva—slipping the labia first over the parietal eminences, then backward over the forehead and face without allowing the head to extend until it is fully delivered. By pressure back of the anus with the hypothenar eminence, the head meanwhile is maintained in flexion close under the pubis. In practice one receives the impression that tension actually diminishes with the progress of delivery. Chloroform is given during pains in the latter part of the second stage. When the head begins to distend the vulva, the patient is turned on her side with a pillow between the knees. Just before delivery, when the parietal eminences have passed the pubic rami, the chloroform is pushed to the point of cessation of pains, the head is steadied, and the vulva is slipped over the parietal eminences and the face, as described. Chloroform is then withdrawn, and the delivery is completed in the dorsal position.

Medical News, New York.

April 29.

14 Protest Against Radiologic Misinformation. H. G. Piffard, New York.
15 *Intramuscular Injections of Insoluble Preparations of Mercury in Syphilis. H. G. Klotz, New York.
16 Case of Syphilitic Pseudoparalysis. J. Sobel, New York.
17 *Two Cases of Gastrostomy with Examination of Stomach Walls by Means of the Cystoscope. R. E. Pick, New York.
18 *Continuous Current in Relation to Inflammatory Exudates. M. A. Cleaves, New York.
19 Rheumatism and the Eye Muscles. F. Valk, New York.

15. **Intramuscular Injections of Insoluble Mercury Preparations in Syphilis.**—Klotz repudiates the claims made by some enthusiasts that insoluble injections are likely to effect an entire and permanent cure of syphilis in the shortest time and with the minimum amount of mercury. He believes that in the insoluble injections we possess one of the most effective methods of bringing the organism infected with syphilis under the influence of mercury, a method, however, destined to supplement rather than to exclude other older methods. Up to the end of 1904 he has records of 2,500 injections made on 204 patients; 2,112 of the salicylate, 150 of the yellow oxid, 216 of calomel, and 3 of gray oil. The age of the patients ranged from 18 to 60 years. The number of injections varied from 1 to 42, sometimes distributed over three and four years. The usual dose was the entire contents of a syringe measuring exactly 1 c.c., representing 10 cgms. (one grain and a half) of the salt suspended in oil or liquid vaselin. The injections were given at intervals of one week, whenever symptoms of syphilis were present, up to their disappearance; then 2 to 4 injections were added at intervals of 10 to 14 days. Ordinarily not more than 10 injections were given continuously except when the intervals had been longer. Such a series was followed by an intermission of several months without any treatment, so that patients who were more or less exclusively treated by injections received 4 to 6 series of from 6 to 8 injections up to about the end of the second year. Under ordinary conditions this was considered sufficient treatment. So-called regular cases during the first two years are hardly available for any definite judgment of the value of a treatment, because a similar course of the disease may be observed with every method, and even occasionally without any treatment at all. In quite a number of the cases other methods were freely alternated with the insoluble injections. An intermission of several weeks or months, with iodids or quinin and other tonics, will render the patient better prepared for the renewal of mercurial treatment. In 129 cases the injections were made in the first two years after infection; in 15 in the third year; in 18 in the fourth and fifth years; in 22 between five and ten years; in 11 between between 10 and 15 years; in 4 between 20 and 30 years; in 9 the term of infection could not be ascertained. The manifestations which were the objects of treatment in these cases were periostitis, 3; gummata of extensor muscles of thigh, 1; gumma of scalp, 1; of lip, 2; lip and tongue, 4; gummatous processes of nose and palate, 6; in diffuse superficial ulcers of pharynx and palate, 3; tubercular syphilide, 13; gummatous ulcers of leg, 6, and of other regions, 4; gumma of the testicle, 2; cerebral syphilis 4. No pain results from the injection itself, if properly made, nor is there any flush around the needle puncture, nor inflammation of the skin. Patients with flat nates, flabby muscles and skin are not favorable subjects for the injections. The salicylate is the best salt to use. Abscess formation results but rarely, only 4 instances occurring in the 2,500 injections. The constitutional symptoms following the injections are slight and of short duration. The patient can attend to his business without inconvenience.

17. **Cystoscopy of Stomach.**—Pick reports two cases to show the value of this method of examination of the stomach. The patient does not eat any food for 6 hours preceding the examination, in the meantime washing his stomach thoroughly until the water returns absolutely clear; then his stomach is filled with water, and, with the patient lying flat on his back, the cystoscope is introduced. The paper is illustrated with photos of the interior of the stomach showing both the cardiac and the pyloric openings.

18. **Continuous Current in Relation to Inflammatory Exudates.**—Cleaves reports 7 cases showing the efficacy of the continuous current for dispelling inflammatory exudates.

Boston Medical and Surgical Journal.

April 27.

20 *Stricture of the Rectum: A Plastic Operation for the Relief of Certain Varieties. H. A. Lothrop, Boston.
21 *Chronic Gonorrheal Prostatitis. C. G. Cumston, Boston.
22 Employment of the Blind for Massage. N. B. Potter, New York.
23 Chronic Bronchitis in the Adult as Influenced by a Change of Climate. E. O. Otis, Boston.
24 Evolution and Tuberculosis. J. B. Huber, New York.

20. **Rectoplasty.**—A case of stricture of the rectum is cited by Lothrop for the purpose of describing an operation performed with a technic differing from any previously published. Under ether anesthesia, the sphincter ani muscles were dilated so as to cause temporary paralysis. A curved incision about three inches long, anterior to the anus and extending transversely across the perineum, was made. It was concave anteriorly and the extremities were near the openings of the ducts of Bartholin's glands. As in the operation for posterior colporrhaphy by the Tait method, the vaginal wall was dissected forward and upward for a distance of about three inches so as to expose the anterior wall of the rectum. The hemorrhage was very moderate. A steel bougie-aboule (French No. 18) was passed through the stricture and the tip could be felt through the rectal wall in front, thus giving an idea of the extent of the cicatricial mass. While the tip of this bougie was still above the stricture, it was directed so as to press the rectal wall into the wound. With a knife this tip was cut down on and the incision enlarged vertically one and one-half inches, so that the rectum above the stricture could be explored. Examination showed a uniform, circular constricting mass of fibrous tissue about three-quarters of an inch thick, forming a sort of diaphragm horizontaly across the lower portion of the rectum. The opening was situated in the anterior portion of the diaphragm. The bougie was not removed, but bent down in the form of a hook for the purpose of exerting traction. The vertical incision was then continued downward through the stricture, making a cut about two and one-half inches long. The margin of the stricture was slightly ulcerated. There was no sign of malignant disease, and the cicatricial tissue seemed to involve all the layers of the rectum. Working through this vertical incision, a second vertical incision, about two inches long, was made in the median line of the posterior wall of the rectum through the stricture. The rectal wall in the vicinity of this incision was freed. The upper and lower extremities of this posterior vertical incision were easily approximated so that the incision could be closed horizontally by the application of five sutures of No. 1 chromicized catgut. After this the anterior incision was closed in a similar manner in a horizontal plane. No feces appeared in

the rectum during these manipulations. From time to time the wound was irrigated with a warm saline solution. The rectum having been shut off from the perineal wound, this was closed as in the Tait method, first burying a continuous strand of chromicized catgut for the deeper regions. The external wound was then closed with six silkworm-gut sutures. On completion of the operation the caliber of the rectum at the site of stricture readily admitted three fingers. A rectal plug, four inches long, made by binding together three rubber drainage tubes with iodoform gauze and covering the whole with rubber dam, was inserted. The operation wound was such that no recto-vaginal fistula could follow, but, if the wound had suppurated, only what would correspond to a fistula in ano would have resulted. The operation lasted about one hour, and the patient rallied well. After operation the patient suffered no particular discomfort. The diet consisted of liquids, without milk, for two or three days, and this was increased gradually so that about eight days after operation the patient was on full diet. The rectal plug was removed on the fourth day, and the rectum irrigated with a warm boric acid solution. The small rubber tube was left in the rectum for a few days longer. On the fourteenth day the silkworm-gut sutures were removed. There was no swelling about the vulva or rectum. The stitches held perfectly and the wound healed without complication. Digital examination showed plainly two horizontal lines of sutures in the rectum. The bowels were kept quiet for one week, at the end of which time an oil enema was given, followed two hours later by a suds enema. After that date the patient was given regularly 10 minims of fluid extract of cascara, three times a day. This served to keep the bowels regular. Patient had complete control of the sphincter muscles and the formed movements were normal in size, a circumstance which had not obtained for a number of years. Patient had left the hospital about four weeks after entrance. Thirteen months after operation the patient is in excellent general health and suffers no local discomfort of any sort.

21. **Chronic Gonorrheal Prostatitis.**—The principal points in the treatment outlined by Cumston may be summed up as follows: First, dilate the strictures, especially those seated in the membranous urethra, proceding with delicacy so as never to cause hemorrhage. Second, rectal massage of the prostate for from three to five minutes. Third, have the patient urinate to wash out the prostatic urethra and thus to remove the secretions that the massage has caused to accumulate there. This is sufficient and is preferable to large irrigations of potassium permanganate which are dirty and often produce useless traumatisms. Fourth, instil 1 c.c. or 2 c.c. of a solution of silver nitrate (1 to 100 for the first few times and rapidly arriving at 1 to 50) into the prostatic urethra. The treatment should be carried out every other day, and the length of time that it must be kept up varies considerably, but, as a rule a cure can be accomplished in less than six or seven weeks. The results Cumston has obtained have been, on the whole, excellent, and 27 of the 32 cases thus treated have been absolutely cured. They have been closely followed for periods varying from eighth months to four years after all treatment had been stopped, and have been submitted on several occasions to the beer test, which has always remained negative.

New York Medical Journal, New York.

April 29.

25 •Nephropexy, pro and con. A. E. Gallant, New York.
26 •Gallstone Disease: Remote Effects and Treatment. S. P. Gerhard, Philadelphia.
27 Contribution to the Plastic Surgery of the Urethra. G. F. Lydston, Chicago.
28 Inflammation of the Glands of Bartholin. C. C. Miller, Chicago.
29 Problem of Exterminating Mosquitoes; Discovery of Inaccessible Breeding Places. H. A. Eberle, Greensboro, S. C.
30 Primary Epithelioma of the Uvula, with Report of a Case Where Recurrence Took Place After Two Operations for Removal. H. Smith, New York.
31 Infection Through the Tonsils. W. S. Anderson, Detroit, Mich.
32 Modern Motherhood. T. Bannan, Syracuse, N. Y.

25. **Nephropexy.**—Gallant discusses the pros and cons of the performance of nephropexy. He says that the majority of clinicians now accept Glenard's theory that the movable kidney is merely an incident in the general ptosis, and symptoms referred to the kidney are much more likely to be the result of intestinal displacement, as is also the case in troubles caused by deformity or abnormal mobility of the spleen, liver or kidney, and dilatation of the stomach, and as the symptoms due to kidney mobility (Dietl's crises, with hydronephrosis, jaundice, or hematuria) can be differentiated by their acuteness, recurrence, and subsidence when the patient has been placed in the inclined dorsal position, and the kidney replaced; and, per contra, as the evidences of gastrointestinal displacement and disorders (gastritis, constipation, malnutrition, nervous instability, splashing sound, and distorted abdominal outline) are notable for their chronicity and rebelliousness to treatment, that nephropexy is justifiable on a displaced kidney after operation thereon, involving it or its pelvis or ureter, or to relieve hydronephrosis or hematuria from a non-replaceable kidney. Hepatopexy, splenectomy, gastroplication, gastrojejunostomy, and suture of the recti may occasionally be indicated. The main obstacle to nephropexy in women lies in the greater obliquity of the lower ribs, which prevent suturing the kidney high enough to avoid harmful compression by the ordinary corset and waistbands. Nephropexy is unjustifiable when, in order to place the sutures, it is necessary to drag the kidney farther down. Nephropexy may relieve the symptoms due to kidney mobility, but in order to overcome those caused by the general ptoses it has been necessary to adopt a new principle, viz., (a) gravity replacement by the semiopisthotonos posture; (b) support of the replaced viscera by a corset made to order from measurements taken while the woman is lying down, laced with two strings, inserted from above down, put on while in the inclined dorsal posture, and fastened in front from below upward. By this method the viscera can not prolapse while the corset is worn, and with this support nephropexy for replacing kidney, *per se*, is but rarely indicated, multiple operations can be avoided, and the patient can be placed under curable conditions.

26.—See abstract in THE JOURNAL, Feb. 18, 1905, page 571.

Lancet-Clinic, Cincinnati.

April 29.

33 •Piroplasmosis Hominis. P. M. Ashburn, Missoula, Mont.
34 Dermatologic Malingering. M. L. Heidingsfeld, Cincinnati.

33. **Piroplasmosis Hominis.**—Ashburn's article is a rearrangement of a report submitted to the Surgeon General of the Army, in July, 1904, and read before the Cincinnati Academy of Medicine in October of the same year, but not printed. It embraces all cases of "spotted fever" occurring in the Bitter Root Valley and the vicinity of Missoula, Montana, in 1904, and the conclusions drawn from their study.

St. Louis Medical Review, St. Louis, Mo.

April 22.

35 Gonorrheal Rheumatism. G. F. Lydston, Chicago.
36 Contribution to the Etiology of Nervous Affections. T. H. Evans, Philadelphia.

Interstate Medical Journal, St. Louis.

April.

37 Review of Methylene Blue Eosin Blood Stain; Report of Some Modifications in Method of Preparation. G. C. Crandall, St. Louis.
38 Amputation Neuromata; Report of Three Cases. T. H. Manley, New York.
39 Indifference to Diagnosis One of the Dangers of Modern Surgery. J. Block, Kansas City.

California State Journal of Medicine, San Francisco.

April.

40 Consideration of Congenital Dislocation of the Hip. H. M. Sherman, San Francisco.
41 Report on an Epidemic of Diphtheria. R. L. Wilbur, Stanford University.
42 Postoperative Ventral Hernia—Its Causes and Prevention. C. G. Bull, Alameda.
43 Etiology of Locomotor Ataxia. J. O. Hirschfelder, San Francisco.
44 Acute Delirium. H. E. Sanderson, Stockton.
45 Uncinariasis; Report of Seven Cases. H. Gunn, San Francisco.

Archives of Otology, New York.

April.

46 Distribution of Blood Vessels in the Labyrinth of the Ear of the Sheep and the Calf. G. E. Shambaugh, Chicago.
47 Anatomy of the Child's Ear, Emphasizing Points of Practical Importance. W. S. Bryant, New York.
48 The Pathology of the Infant's Ear Underlying Aural and General Disease. J. A. Kenefick, New York.
49 Otitis Media in Children. A. Jacobi, New York.
50 Operative Treatment of Diseases of the Ear in Childhood. E. B. Dench, New York.

Brooklyn Medical Journal.

April.

51 High Rectal Cancer. C. Jewett.
52 Cardiac Status in Renal Disease. J. M. Van Cott.
53 Report of Present Condition of Cases Operated on for Congenital Dislocation of Hip. C. D. Napier.
54 Conservatism and Radicalism in the Practice of Medicine. E. E. Cornwall.
55 Case of Epithelioma of External Auditory Canal, Tympanic Cavity and Mastoid. B. C. Collins.
56 Elephantiasis of the Scrotum. W. F. Campbell.
57 Case of Hysterical Aphasia and Paralysis. L. G. Kerr.

Memphis Medical Monthly.

April.

58 Greatly Increased Frequency of the Occurrence of Abortion, as Shown by Reports from Memphis Physicians. J. L. Andrews, Memphis.
59 Cholelithiasis. J. A. Crisler, Memphis.
60 Pyelitis. M. Goltman, Memphis.
61 Mitral and Aortic Incompetency, with Special Reference to Therapeusis. R. N. Greene, Greenville, Fla.
62 Pleurisy Complicating Pneumonia. O. S. McCown, Memphis.
63 Cesarean Section Complicated by Rupture of the Uterus; Recovery of Mother and Delivery of Living Child. B. C. McMahon, New York City.

Iowa Medical Journal, Des Moines, Iowa.

April 15.

64 Introduction of Soft Rubber Tube in Intestine Through the Stomach for Medical and Surgical Purposes. W. J. Latta, Des Moines.
65 Treatment of Diphtheria. E. F. Cowger, Riverton.
66 Physician's Duty. C. A. Boice, Washington, Iowa.
67 Emphysema. W. W. Hunter, Monticello.
68 Use of a Solution of Adrenalin Chlorid in Oil in the Acute Forms of Rhinitis and Laryngitis. J. M. Brown, Chicago.

Archives of Pediatrics, New York.

April.

69 Work of the Babies' Wards of the New York Postgraduate Hospital for Convalescent Children. H. D. Chapin, New York.
70 Primary Adenosarcoma of the Liver in a Child of Nine Months. L. E. Holt, New York.
71 Congenital Obliteration of the Bile Ducts. J. P. C. Griffith, Philadelphia.
72 Sclerema Neonatorum; Report of a Case with Complete Recovery. J. Sobel, New York.
73 Errors in Diet as a Cause of Infantile Diarrhea. St. G. T. Grinnan, Richmond.

Wisconsin Medical Journal, Milwaukee.

April.

74 "Radio-Activity." The Therapeutic Result We May Expect at Its Present Stage of Development. William Sickles, Milwaukee.
75 Complete Diagnosis. E. Evans, La Crosse.
76 Anatomic Anomalies Encountered in Abdominal Operations. H. Reineking, Milwaukee.
77 Remarks on Pneumonia. F. W. Epley, New Richmond, Wis.
78 General Practice in Northern Wisconsin. J. P. Cox, Spooner, Wis.

Journal of Medicine and Science, Portland, Me.

April.

79 Thermometers and the Measurement of Temperature. A. L. Clark.
80 Weather Forecasting. H. I. Allen.
81 Panama Canal Mismanagement. C. A. L. Reed.

Canadian Journal of Medicine and Surgery, Toronto.

May.

82 Treatment of Tuberculosis in Ontario. J. H. Elliott, Gravenhurst, Ontario.
83 Case of Multiple Sebaceous Cysts. A. McPhedran, Toronto.

Medical Fortnightly, St. Louis.

April 25.

84 Why Quackery Thrives. R. W. Wilcox, New York.
85 Duty of the Medical Expert to the Individual and to the State. R. B. H. Gradwohl, St. Louis.
86 Relation of Man to Nature (a Study Prompted by "Testimonies of the Sepulchres"). A. S. Ashmead, New York.
87 Anatomic Eponyms. R. S. Gregg, Chicago.

Virginia Medical Semi-Monthly, Richmond, Va.

April 21.

88 Case of Extensive Embolic Gangrene: With Remarks on the Indications for Multiple Amputations of the Extremities. M. H. Richardson, Boston, Mass.
89 Immediate Repair of Lacerations of Cervix. E. McGuire, Richmond, Va.
90 Circumcision—Its Technique, Anesthesia, Operation, After-Treatment and Report of Cases. E. A. Timmons, Columbia, Tenn.
91 Asthma. J. G. Nelson, Richmond, Va.
92 Case of Multiple Perforations of Stomach, Mesentery and Intestines, with Recovery. J. E. Cannaday, Paint Creek, W. Va.
93 Contract Doctor. G. A. Hogan, Bessemer, Ala.

Dominion Medical Monthly, Toronto.

April.

94 Cocaine Anesthesia. I. Olmsted, Hamilton, Ontario.
95 Lympho-Sarcoma. B. Milner.
96 Case of Hysterectomy for Fibroid of the Uterus; Recovery. A. L. Smith, Montreal.

New Orleans Medical and Surgical Journal.

May.

97 Plasmodium Malariæ Outside the Body of Man. C. D. Simmons, Baton Rouge, La.
98 Salient Points in the Morbid Psychology of Maniacal States. E. M. Hummel, Jackson, La.
99 Influenza; Complications, Sequelæ and Treatment. B. O. LeBlanc, St. Gabriel, La.
100 Beta-Naphthol in Uncinariasis. E. M. Dupaquier.
101 Case of Hysterical Arthralgia or Brodie's Joint. F. W. Parham.

Woman's Medical Journal, Toledo, Ohio.

April.

102 Exencephalus; Report of Case. M. M. S. Johnstone, Chicago.
103 "The Woman Physician." L. H. Branson.
104 Case of Achondroplasis and One of Sublingual Tumor in Baby of Eleven Months. H. Michael, Chicago.

FOREIGN.

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

British Medical Journal.

April 15.

1 *Treatment of Empyema. J. H. Pringle, Glasgow.
2 Contribution to the Treatment of Chronic Empyema. O. Grunbaum, London.
3 *Iron Acetate in Treatment of Pneumonia. H. J. Robson, Leeds.
4 New Methods of Studying Affections of the Heart. J. MacKenzie, Burnley.
5 Case of Purulent Pericarditis in an Infant: Operation; Death. J. A. Coutts and R. P. Rowlands, London.
6 Hepatic Factor in Biliousness. F. Hare, Queensland.
7 Closure of Traumatic Defects of the Skull. C. L. Green, Birmingham.

1. **Treatment of Chronic Empyema.**—The treatment advocated by Gruenbaum consists in the application of a negative pressure to the pleural cavity for several hours every day. The development of a negative pressure of 10 to 15 mm. Hg can be easily maintained by inexpensive apparatus. In selecting the pump, it must be remembered that there may be a slight leak at the chest wall, so that it is wise to choose a pump which will remove considerable quantities of air, and not one which is designed to develop a perfect vacuum. For this reason Fischer's filter pump is almost ideal, because the regulation of the negative pressure developed is easily carried out by altering the length of the tube used, and that form of pump requires very little water—less than half a gallon an hour—and thereby gives but little trouble. It would not be wise to connect the pump direct with the empyema, for two reasons—(1) if anything should go wrong with the pump, water would pass into the cavity; (2) if there were much discharge, the pump would become dirty and would refuse to act. A large bottle is connected between the pump and the chest, and this is partially filled with carbolic lotion; by placing the bottle on a higher level than the pump, it is found that even when the water is flowing extremely slowly, respiratory movements do not lead to sufficient alteration in pressure to draw the water into it. A negative pressure of 80 mm. Hg is used in adult cases, and this is accomplished by having a fall of nearly 2 meters. Since the apparatus described above, although possessing the advantage of costing less than ten shillings, nevertheless labors from the disadvantage of requiring a slight amount of attention, it was thought worth while to devise one that would work without any attention at all. A small exhaust pump of about 16 c. cm. capacity was run by a small electric motor; with this arrangement it is necessary to place a valve in the system to prevent too great a negative pressure being developed. The arrangement which was adopted consisted in connecting the pump with a large wide-mouthed bottle, through the cork of which three tubes passed. One of these was connected with the pump, one with the chest, and the third was open above, but inside the bottle passed into a cylinder containing mercury. The depth of the mercury was over 15 cm., the tube could be drawn up so that the distance of the end from the surface of the mercury could be adjusted with ease. It is necessary for the cylinder to be at least 2 centimeters in diameter, because air bubbling through mercury agitates it so greatly that if a small cylinder be used the mercury would be thrown out of it; gauze should be tied over the top of the cylinder. The negative pressure de-

veloped depends on the depth of the opening of the tube below the surface of the mercury and efficiently prevents a dangerous exhaust being established. The treatment is painless; usually the pulse rate is slightly accelerated, but that may be due to the excitement of having the apparatus by the bedside. The advantages which may be claimed for this treatment are two: The negative pressure tends to expand the lung without necessarily causing emphysema of the other lung, which may be expected from the use of James's bottles. 2. The negative pressure produces a hyperemia of the tissues of the pleural cavity, which probably increases their local resistance.

3. **Iron Acetate in Pneumonia.**—For the last seven years Robson has treated all cases of pneumonia—whether bronchopneumonia or lobar pneumonia—by iron acetate, and severe cases by alternate doses of iron acetate and strychinin, with surprisingly good results. The prescriptions used are:

℞. Liquor ferri perchlor. .....m. xv 1
Liquor ammon. acetat.....3ii 8
Aq. chloroformi ad.....℥ss 16

Sig., No. 1: Take every 4 hours in water when given alone; take every 6 hours alternately with the strychnin mist. when this latter is needed. (It is administered every 6 hours until the patient is well over the crisis; then it is given every 8 hours, and later every 12 hours alternately with the strychnin.

℞. Liquor strychninæ .....m. v 3
Aq. chloroformi ad.....℥ss 16

Sig. No. 2: Take every 6 hours in water alternately with the ferri mist. and as above stated (in severe cases only).

℞. Pine oil, for dry inhalation on a clean handkerchief.

Alcohol is seldom given until toward or after the crisis, and often it is not required at all, and then only as the pulse or condition of the patient directs. Oxygen is seldom required, but when it is given it is administered "warm," being either gently blown into the patient's mouth and nose at a temperature of 90 degrees or 95 degrees F., at which temperature there is no cold draft or feeling of cold, or inhaled directly at a temperature of 65 degrees F. from an oxygen warmer. Quinin is never given. Digitalis seems seldom needed if the treatment by iron acetate is adopted early. Antipyretics of the coal-tar series are carefully avoided. Tepid sponging or the cold pack is resorted to for lowering a high temperature; though under the above treatment it seems to be seldom required. The temperature of the bedroom is kept at 63 degrees F., and free ventilation is encouraged. For pleuritic pain an occasional mustard leaf and a flannel binder, carefully applied round the chest, are resorted to. If these fail to relieve the pain, a small dose of morphin is given. Systematic poulticing is condemned. The treatment by this alternate administration of iron and strychnin (where the latter is called for) seems to be particularly useful under the following conditions:

1. Cases of severe bronchopneumonia in infants or children, and in catarrhal and lobar pneumonia in debilitated subjects. 2. Where one has not two properly trained nurses for night and day respectively, as by the regular administration of the strychnin through the night as well as through the day, the heart action is kept up, and the danger of heart failure at the crisis is very much lessened. 3. In the infectious, creeping, and spreading form of pneumonia which follows influenza. 4. The crisis is hastened and favorably modified, the virulence of the disease is lessened, and the complication of emphysema seldom occurs. 5. Even when bronchitis is present, there seldom is need to order depressing drugs like ipecacuanha, as the iron acetate seems to act as a good expectorant.

The Lancet, London.

April 15.

8 *Cure of Cancer. E. Owen.
9 Cyllin Inhalant. E. Klein.
10 Relationship Between Dental and Other Diseases. R. D. Pedley.
11 *Tetanus Successfully Treated with Antitetanic Serum and Curare. E. Collins, London.
12 *Investigation into the Causations of Puerperal Infections. A. G. R. Foulerton, England.
13 Nature of Diabetes Mellitus. W. C. Bosanquet.
14 Dissemination of Mammary Carcinoma. W. T. Handley..

8. **Cure of Cancer.**—Answering the question, is a surgeon ever justified in claiming that he has cured a patient of cancer, Owen says that at present "no sign of return" is as much as a surgeon is justified in claiming as the best result of his treatment of cancer. He cites one case of cancer of the breast that was operated on by him for the last time in 1879. The patient is still living, enjoys perfect health, and there has never been any return of the disease.

11. **Antitetanic Serums and Curare in Tetanus.**—The case reported by Collins received 70 c.c. of antitetanic serum within 48 hours, and 20 grs. of chloral hydrate and potassium bromid every 4 hours, without any improvement in his condition. Two days later one-twelfth grain of curare was injected hypodermically into the forearm; repeated 8 hours later, and again on the following day, the dose being gradually increased to one-half a grain. The curare was given for about a week. For 4 days the patient was given 20 grains each of chloral hydrate and potassium bromid every 4 hours. For the next 5 days, the dose of each was decreased to 10 grains, when it was again increased to 20 grains. Collins says that after removing the site of inoculation, antitetanic serum should be injected under the skin of the abdomen in large doses (from 20 to 30 cubic centimeters) and repeated daily for a week or ten days. Theoretically, this should neutralize the poison already absorbed into the system; anyhow, it is the only means which we have of achieving that object, and large doses cause no ill-effects. He cannot conceive that curare has a direct action on the specific poison, but it has some influence in diminishing the severity of the clonic tetanic spasms by paralysing the nerve endings. It should be injected hypodermically, morning and evening, commencing with one-sixth of a grain and gradually increasing the dose, according to the severity of the spasms, to one grain. Chloral hydrate and potassium bromid (20 or 30 grains of each every four or six hours) are the most likely drugs to give beneficial results in producing sleep and relieving the irritability of the motor nerve cells in the brain and the spinal cord. Other details in the treatment of tetanus, such as absolute quiet in a darkened room, the administration of chloroform for relieving severe tetanic convulsions of for passing the feeding tube or catheter, and the choice of suitable aperients, need no comment.

12. **Puerperal Infections.**—Foulerton and Bonney conclude the results of their investigations into the causation of puerperal infections. They are of the opinion that the old classification of cases of peurperal fever into sapremic, septicemic, and pyemic has but little value; a comparison of clinical observations with bacteriological findings shows that it is practically impossible to distinguish between cases of septicemia which are, for the time, of a mild type and cases of "sapremia," using the latter term in the sense in which it was formerly used in this connection, and bacteriologically the distinction between a case of septicemia and one of "sapremia," or toxemia, as it is now termed, is often extremely indefinite. While no really useful, and at the same time concise, scheme for the classification of a class of diseases presenting the variety of features which is presented in puerperal fevers is practicable, the following scheme at any rate indicates the main pathologic processes concerned in the production of the symptoms of these infections: I. Infection of lacerations of the perineal tissues or of the vaginal wall (sometimes with direct extension by contiguity of surface to the cavity of the uterus). 1. Localized infection plus toxemia. 2. Localized infection plus toxemia, plus generalized infection. II. Primary infection of the contents of the uterus or of the placental site. 1. Localized infection plus toxemia. 2. Localized infection plus toxemia plus generalized infection. The chief point which presents itself among the results of their investigation is the predominating importance of streptococcic infection in the causation of puerperal fevers. The next most important organism was micrococcus pneumonia. Infection by various strains of streptococci or by micrococcus pneumonia was present in 33 out of 40 cases of severe puerperal fever, and these organisms may be held responsible for 13 out of the 14 deaths which occurred. Between streptococci generally and micrococcus pneumonia there are such close affinities with respect to pathogenic action that, apart from the question of specific antitoxic serum treatment, the same general treatment may be regarded as applicable to either. As a general rule, in the absence of a

definite bacteriologic diagnosis, the safe course for the practitioner to adopt is to deal with every case of puerperal fever in which the temperature rises above 102 degrees F. as if it were a case of streptococcic infection. For serum treatment to be applied with any reasonable hope of success under present conditions a polyvalent or compound serum from a horse immunized against the various strains of streptococcus which are met with in puerperal infections is necessary. The authors believe that by the use of such a compound antistreptococcic serum, recently obtained from the horse and used in sufficiently large doses, a considerable reduction in the mortality caused by streptococcic puerperal fever could be affected. In the case of either a streptococcic or pneumococcic infection of the uterus, with or without secondary infection by other bacteria, curettage would seem on the one hand to be incapable of doing any good, and on the other hand might be productive of most serious results by infecting the hitherto intact deeper tissues of the uterine wall. Nor is it probable that in cases in which the uterus is invaded by bacteria which, unlike the streptococcic and micrococcus pneumonia, have little tendency to infect the deeper layers of the uterine tissues, the operation is likely to effect any definite good by removing all infection, however thoroughly the curettage may be carried out. Therefore, the use of the curette should be absolutely discarded in the treatment of peurperal uterine infection. The best local treatment to adopt is that which is now commonly carried out in Great Britain at the onset of puerperal fever—digital exploration of the uterus, the removal in this way of any retained fragments and subsequent douching of the cavity of the uterus with an antiseptic solution. A clinical fact of some importance is that, although invasion of the uterus by streptococci is marked by a sharp rise of temperature and other symptoms of same severity, the fever may be transient, subsiding within 48 hours without any special treatment. This fact is one that may be useful when tracing the conveyance of infection in puerperal cases. As to preventive measures which can be taken against the risk of auto-infection, more especially the use of vaginal douching with antiseptic solutions before the commencement of labor, the procedure is generally a useless one, but, at the same time, the objection which has been urged against it, that by means of it bacteria may be conveyed from the vulva to the upper part of the vagina, appears to be without good foundation.

Bulletin de l'Académie de Médecine, Paris.

Last indexed page 1320.

15 (Year LXIX, No. 12.) *Ankylostomiase. Calmette and Breton.
16 Maladies endémiques, epidémiques et contagieuses qui ont régné dans les Colonies françaises en 1903. Kermorgant.
17 (No. 13.) *Diabète et la cure arsénicale. Verdalle.
18 Variations de l'astigmie cornéenne avec l'age. F. Lagrange.
19 *La poussière des routes (dust on highways). A. Josias and Guglielminetti.
20 Discussion sur la paralysie générale de la syphilis. Motet, Cornil and Fournier. See abstract page 1320.

15. **Experimental Ankylostomiasis.**—Calmette reports that he has succeeded in infesting young dogs with the human and the canine ankylostomata by way of the skin. The eggs were found in the dejecta in a few weeks. The same parasites given by way of the mouth or injected into the eye failed to produce infection when of human origin. The canine parasites propagated after ingestion by the mouth. The skin is, therefore, a mode of entry for this parasite, at least in dogs.

17. **Mineral Waters in Diabetes.**—Verdalle presents evidence to demonstrate that certain forms of diabetes are particularly amenable to arsenical waters, especially to those of La Bourboule. The variety of diabetes to which he refers is that accompanied by hypertrophy of the liver and hyperfunction of this organ. He relates a number of convincing instances.

19. **To Prevent Dust on Highways.**—Josias discusses the various attempts that have been made to prevent dust on highways. The petroleum products have not proved satisfactory, he says, and westrumite is not effectual, according to Cristiani and Michelis' recent tests. Automobile makers, he says, should study to prevent the raising of dust; the escapement should not point downward, the tires should be full, and the under part of the frame should be smooth. The ideal would be to have the body egg shaped, sloping up toward the back.

Presse Médicale, Paris.

Last indexed page 1407.

21 (No. 19.) *L'habitation coloniale. J. D. Anfreville (St. Louis, Senegal).
22 Le rôle du réflexe oesophago-salivaire dans la déglutition. H. Roger.
23 Adéno-phlegmons iliaques et pelviens consécutifs aux lymphangites du membre inférieur. M. Savariaud.
24 Histoire d'un epithélioma palpébral. A. Trousseau.
25 (No. 20.) Air confiné et tuberculose. R. Brunon.
26 L'examen clinique du détroit supérieur (of inlet). V. Bué.
27 (No. 21.) Campaign Against Ankylostomiasis in Germany.—La lutte contre l'ankylostomiase en Allemagne. E. Fuster.
29 (No. 22.) Le vernix caseosa. L'hérédo-séborrhée et l'acné foetales. L. Jacquet et Rondeau.
29 De l'atrophie optique tabétique. F. Terrien.
30 (No. 23.) *Rupture de l'aorte. Ch. Achard et G. Paisseau.
31 High-Frequency Currents and Hemorrhoids.—Courants de hautes fréquences et hémorroides. Delherm et Laquerrière.
32 (No. 24.) J. P. Pawlow. J. P. Langlois.
33 Le centenaire de Manuel Garcia, inventeur du laryngoscope. M. Lermoyez.
34 L'artérite algue rhumatismale. E. Barlé.

21. **Houses in the Tropics.**—D'Anfreville writes that in Senegal it is now a law that every one planning to build must consult with a medical hygienist. He gives plans for the ideal home in the tropics, preferring a rectangle, the partitions running across the house, which is only one large room deep, the length divided into three rooms. The glass doors opening on the veranda, which encircles the house, are all opposite each other, with doors in the middle of each end of the house, with doors in the partitions opposite them. This allows a sweep of air through each room from end to end and from side to side. The roof should be in two parts, one overlapping the other, with an air space between and also between the sloping roof and the flat ceiling of the rooms. He advises a single story, and urges the use of native bricks, made hollow, and nearly eight by twelve inches square. This makes a very light and thick wall. Wood should be the last resort for a building material in the tropics. All exposed surfaces should be painted or varnished in some light color. The kitchen and privies should be at a distance from the house. The space around the house should be kept free of trees, but at a little distance a few scattered trees, carefully chosen, eucalyptus, filaos and tamarinds, will give shade without interrupting the circulation of air. Heavy foliaged trees should be avoided, and the stables should be as far from the house as possible.

30. **Rupture of Aorta.**—Achard describes the case of a man of 44 who was suddenly seized while at the dinner table with distress and dyspnea. The symptoms moderated, but he said he felt as if "he had a clot of blood in his throat." There was no hemoptysis. He passed a restless night, rising several times to drink large quantities of water. He rose early on account of increasing dyspnea, and after sitting quietly in a chair fell unconscious and died in a few minutes. A slit was found in the aorta, and the left pleural cavity was full of blood. The man had been a wrestler and acrobat, a hard drinker, but had settled down as a photographer about a year before. Achard reviews the similar cases in the literature. Atheroma is generally noted on the ruptured artery, but not always at the point of the rupture.

Semaine Médicale, Paris.

35 (XXV, No. 12.) *La rétention chlorurée sèche (retention of salt without tendency to effusion). L. Ambard and E. Beaujard.

35. **Retention of Chlorids Without Fluids.**—Ambard and Beaujard quote with approval Chrestien's saying: "Milk or death," when speaking of interstitial nephritis. But they modify it by substituting "hyposalt régime" or salt starvation in place of milk alone. They emphasize, further, that this deprivation of salt can not be temporary, but must be kept up indefinitely. They relate in detail a number of case-reports with curves, showing retention of chlorids and the effect of a salt-free diet without any variation in the weight, that is, without any corresponding increase or loss in the fluids of the body. This "dry retention of chlorids" is observed in certain cases of interstitial nephritis, while epithelial nephritis is accompanied by retention of fluids also. In epithelial nephritis the retention of chlorids is generally proportional to the amount of the chlorids ingested, and is accompanied by edema, while in interstitial nephritis the retention of chlorids usually follows ingestion of extra amounts, and

later the chlorid saturation is relieved by elimination of the ingested salt in a flood. There is the closest connection between the clinical signs and the retention of salt, or "chloridation" as the French call it. This is the cause of the permanently high arterial tension in nephritis. Every individual reacts with vasoconstriction and hypertension to effort and pain. The subject with Bright's disease, however, instead of reacting moderately like the healthy subject, has his vasoconstrictors forever on the defensive with an extraordinarily vigorous heart. All other causes of hypertension induce a transient reaction, but retention of salt induces a permanent hypertension if the vascular system is capable of responding with any reaction. Other symptoms of interstitial nephritis are influenced likewise by retention of salt. The headache is unmistakably affected by it. In a number of cases of interstitial nephritis the writers were able to produce and to banish at will a very severe pulsating headache as also dyspnea by "chloridation' or "dechloridation." The dyspnea is alimentary, but the salt is the exclusive cause. Polyuria is not observed in interstitial nephritis, except when salt food is being ingested or large quantities of fluids to disguise the taste of milk, or when there is an extraordinary large output of salt. The polyuria disappears if such subjects are put on a salt-free diet, although allowed to drink at will. Dry retention of the chlorids is liable to entail a supersaturation of the tissues with salt. In interstitial nephritis the chlorid test of the permeability of the kidneys is not reliable when based on increased intake of chlorids, but only when based on total deprivation. In the functionally, if not anatomically, curable stage the diet should be free from salt. This hypochlorid diet, supplemented by theobromin, purgation and temporary rest in bed, is the treatment *par excellence* of the retention of chlorids, and of the headache, dyspnea and arterial hypertension. It may not be able to restore the latter entirely to normal, but it reduces it within reasonable limits. Experience has shown that the tendency to retention of chlorids, once acquired, is liable to persist permanently, and hence the salt-free diet is required indefinitely to ward off this impending contingency.

Archiv f. Gynäkologie, Berlin.

Last indexed page 1488.

36 (LXXIV, No. 3.) Behavior of Vessels in Tubal Pregnancy.—Gefässe bei Eileiterschwangerschaft. Autothrombose. O. O. Fellner.
37 Nursing Capacity.—Stillvermögen. G. Martin.
38 *Ueber den Riesenwuchs der Neonatorum (giant growth). Jacoby.
39 *Childbirth in Case of Giant Growth and Duration of Human Pregnancy.—Ueber Geburten bezw. Spätgeburten bei Riesenwuchs der Kinder und über die Dauer der menschlichen Schwangerschaft. E. Starcke.
40 Deciduale Zellbildungen am Wurmfortsatz bei Tubenschwangerschaft (Periappendicitis decidualis). A. Hirschberg.
41 Kurze Uebersicht über 1000 von Prof. Fenomenoff ausgeführte Laparotomien. E. V. Podhoretzky.
42 Ueber Verkalkung in den Fimbrien der Tuben (calcification). G. A. Wagner.

38 and 39. **Giant Growth of the Newborn.**—Jacoby states that 5.87 per cent. of 6,976 children born at the Mannheim maternity weighed 4,000 gm. and over. The minimum duration of pregnancy with these large children was 247 days and the maximum 349. Artificial premature delivery is the best measure to prevent injury from delivery of extra large children. He discusses the various aspects of giant growth of the fetus, comparing the data from several clinics.

Starcke reports from Leopold's clinic at Dresden that 3.43 per cent. of 34,000 newborn children weighed 4,000 gm. and over. The list includes 16 children who weighed 5,000 gm. and over, and 7 of this group were spontaneously delivered. About 10 per cent. were born dead or did not survive the delivery. The duration of the pregnancy was not extraordinarily long except in .257 per cent. The German law accepts 302 days as the maximum.

Archiv f. klinische Chirurgie, Langenbeck's, Berlin.

Last indexed page 992.

43 (LXXV, No. 3.) *Beitrag zur akuten Erkrankung der Bauchspeicheldrüse (pancreatitis). Nobe.
44 Klinische und experimentelle Beiträge betreffend das Aneurysma arteriovenosum. Franz.
45 Zur Casuistik der Finger-Tumoren. F. A. Suter.
46 Zur Aetiologie und pathologischen Anatomie der Coxa vara. A. Schlesinger.
47 *Erfahrungen über Friedensschussverletzungen (bullet wounds). M. Kromer.
48 *Nerves of Abdominal Cavity.—Ueber die Nerven der Bauchhöhle, insbes. den Plexus coeliacus und ihren event. Einfluss auf die Pulsfrequenz bei Peritonitis. H. Strehl.
49 Toxic Action of Chloroform on Kidneys of Rats, Guinea-pigs and Rabbits.—Experimenteller Beitrag zur toxischen Wirkung des Chloroforms auf die Nieren. Offergeld.
50 (No. 4.) Ein Wort für die radicale operative Behandlung des chronischen Magengeschwürs (gastric ulcer). A. Krogius.
51 Hemolytic Phenomena After Burns.—Ueber Art und Ursache der nach ausgedehnten Verbrennungen auftretenden hämolytischen Erscheinungen. Burkhardt.
52 Functional Kidney Tests.—Ueber die Methoden vor den Nierenoperationen die physiologische Leistungsfähigkeit der Nieren zu bestimmen. T. Rovsing.
53 Fatty Metamorphosis in Internal Organs After Use of Anesthetics.—Ueber Fettmetamorphose in den inneren parenchymatosen lebenswichtigen Organen nach einfachen und Mischnarkosen. B. Müller.
54 Ileus from Adhesions in Suppurative Appendicitis.—Ueber Adhäsionsileus im Verlauf einer eitrigen Perityphlitis. Federmann.
55 Lacerations of Liver.—Ueber Leberzerreissungen. Rammstedt.
56 Ein Fall von Chyluscyste (chyle cyst). J. Speckert.

43. **Acute Pancreatitis.**—Nobe reports from the Braunschweig Hospital 2 cases of acute pancreatitis cured by operation. The first was accompanied by diffuse peritonitis, but there was no fat necrosis of the pancreas. After the operation and tamponing, a fistula developed which required eight weeks for its complete healing. In the other case the pancreatitis caused the development of an encapsulated exudate, and large fragments of necrotic pancreas tissue were thrown off. The first patient was a housemaid 18 years old, the second, a stoker of 64. Both are in good health at present.

47. **Bullet Wounds in Peace.**—The Urban Hospital at Berlin has had occasion to care for 150 firearm wounds during the last ten years. This experience is reviewed in Kromer's article. The head was injured in 54 cases, the breast in 42, the abdomen in 16, and the limbs in 33. The cases treated by laparotomy are each summarized.

48. **Nerves of Abdominal Cavity.**—Strehl removed the celiac ganglion in 22 cats and found that the only appreciable result was the acceleration of the movements of the intestines. Diarrhea was the rule afterward, with corresponding loss of weight and strength. He ascribes the diarrhea to the exclusion of inhibiting control of the intestinal movements from centers in the brain or spinal cord. The normal regulating inhibition is lacking, while the tonicity of the ganglia in the intestinal walls is permanently increased. The intestines were found always in contraction when the animals were killed. Further experiments, in which the vagi were also severed in addition, resulted negatively.

Berliner klinische Wochenschrift.

57 (XLII, No. 12, March 20.) *Etiology of Cancer.—Was wissen wir über die Ursache der bösartigen Geschwülste? v. Hansemann.
58 *Function of Sebaceous Glands and Their Relation to Fat Metabolism.—Ueber die Funktion der Talgdrüsen und deren Beziehung zum Fettstoffwechsel. A. Buschke.
59 *Influence of Alcohol on Changes in Pupillary Reaction.—Ueber die Wirkung des Alkohols auf die Veränderung der Pupillenreaktion. H. Vogt.
60 *Ueber Rectal-Gonorrhoe bei Vulvovaginitis infantum. K. Flügel.
61 *Die Morphologie der Krebse und die parasitäre Theorie (cancer). J. Orth.
62 *Reciprocal Actions Between Diabetes and Surgical Interventions.—Ueber Wechselwirkungen zwischen Diabetes und chirurgischen Eingriffen. Karewski. (Concluded.)
63 Latest Research on Origin and Treatment of Myopia.—Entstehung und Behandlung der Kurzsichtigkeit. Helbron.

57 and 61. **Etiology of Cancer.**—This address by von Hansemann on "What do we know in regard to the cause of malignant tumors" was summarized in the Berlin letter on page 1207, as also Orth's address which follows.

58. **Functions of Sebaceous Glands.**—Buschke has been making a study of the functions of the Meibomian glands in healthy guinea-pigs. He found that subcutaneous injection of a 1 per cent. aqueous solution of physostygmin salicylate caused a remarkable increase in the secretions of these glands. Within one to four hours a milky fluid could be seen accumulating at the edge of the lids or pouring in a stream from the outlets of the ducts. Study of the secretion has convinced him that the sebaceous glands secrete fat and that the destruction of the cell is essentially a secondary process. Tests with oil of sesamum confirmed the possibility that, under particularly favorable conditions, fat from the food may be excreted through these glands.

59. **Pupil Reaction Under Influence of Alcohol.**—Cramer's research has confirmed the results obtained by others, namely, that all the reflexes are more or less affected by acute alcohol intoxication, with the exception of the pupil reflex. This is not affected in the normal human subject. In degenerates, on the contrary, the pupil reflex is liable to be notably affected, even by a single, small dose of alcohol. Persons who respond with this modification in the pupil reflex under these circumstances can be regarded as very unstable and liable to react even to a small dose of alcohol with criminal tendencies. In a third of the tests the pupil reaction occurred with remarkable sluggishness under the influence of the test dose of 40 c.c. rum in a glass of hot water. In the other cases no effect was apparent, although conditions apparently favored it. Arteriosclerotic subjects presented the phenomenon in an intenser degree, and some writers have stated that it was also evident in persons addicted to alcohol, otherwise apparently healthy. The modification in the pupil reflex is probably due to the inhibiting influence of the alcohol on the brain.

60. **Rectal Gonorrhea with Vulvovaginitis.**—Flügel states that in 20 per cent. of 56 children with gonorrheal vulvovaginitis, the rectum was involved in the morbid process. The conditions are less favorable than in the vagina, and consequently the affection yielded to treatment more readily, the cocci vanishing from the rectum while they were still lingering in the vagina. The possibility of involvement of the rectum should never be overlooked in case of gonorrhea in children.

62. **Surgery in Diabetics.**—Karewski reviews the various operations and their contraindications in diabetics. In inflammatory and gangrenous processes he advises excision instead of incision, operating in sound tissue. Sometimes coma comes on after mere incision. He has had 5 such cases but saved one by prompt extirpation of the focus. Already established coma, therefore, is no contraindication to operation. As a rule, it is wiser to reduce the sugar and raise the patient's resisting powers before attempting intervention, except in case of cancer. He has had one patient recover out of 3 operated on for removal of a cancer of the rectum. An artificial anus is advisable in certain cases, especially in those in which the tumor is operable, but the patient's general condition forbids its removal. The conditions are far more favorable for extirpation of a cancer of the large intestine or stomach, as asepsis can be maintained. Boas recommends resection of the bowel in such cases, excluding only those with acetonemia. In other surgical affections, if there are no indications of general sepsis, it is better to aim for natural healing rather than to use the knife and open a route for infection. This applies especially to inflamed corns and ingrowing nails in diabetics. They seldom induce severe conditions, if unoperated on, while their well-meant removal has cost many a diabetic his life. On the other hand, suppurations in tendon sheaths and joints require to be extensively opened up to allow the escape of the last trace of pus, with ruthless disregard of possible interference with function later. The tendons, ligaments and muscles must be severed or removed, and even the limb amputated, to banish completely the morbid secretions. By operating in this way he cured 2 patients already in coma and apparently lost, an ordinary panaritium having caused suppuration creeping upward into the elbow, impossible to arrest by any means except by these radical and finally successful measures. He reviews the entire field of surgery in diabetics in detail, and shows that by observing certain precautions the knife may prove a life-saving measure even in cases in which its use was apparently most to be dreaded.

Deutsche medizinische Wochenschrift, Berlin and Leipsic.

64 (XXXI, No. 12.) *Present Status of Preventive Typhoid Serum Treatment.—Ueber den Stand der Typhusschutzimpfungsfrage auf Grund der neuesten Untersuchungen. W. Kolle.

65 Klinische Beobachtungen und Erfahrungen mit dem Pneumococcen-Serum Roemer bei der croupösen Pneumonie. Knauth.

66 Beiträge zur Kenntnis des Diabetes mellitus im Kindesalter (in children). Langstein.

67 Erfahrungen über die Behandlung des Scharlachs mit Antistreptococcen-Serum (in scarlet fever). L. Mendelsohn.

68 *Anesthesia Under Atmospheric Over-Pressure. Ein neurer Beitrag zur Frage der Ueberdrucknarkose. H. G. Engelken.

69 Pro and Con Artificial Premature Delivery.—Für und wider die künstliche Frühgeburt. K. Baisch.

70 "Shorthand Speech" for the Deaf-Blind.—Ein Versuch zur Verständigung bei Fehlen des Gehörs und Gesichtssinnes. A. Goldschmidt.

71 Cosmetic Advantages of Black Bandages.—Schwarze Binden. Oppenheim.

72 *Soziale Medizin. Umschau.—Landsberger.

64. **Protective Typhoid Inoculations.**—Kolle's experience at the Berlin Institute for Infectious Diseases has shown that the immunizing effect of typhoid inoculations depends to a great extent on the special culture. Some cultures are efficient and others are less active. Wassermann places most stress on the binding power of the culture. The power to elicit production of bacteriolysins does not parallel the virulence, he believes, but it parallels the capacity of the culture to bind the specific amboceptors of a serum *in vitro*. Kolle's experience has confirmed this, and he is using now for the protective inoculations a culture picked out from a collection of several hundreds. One-fifth to one-tenth of a loop confers active immunity on guinea-pigs and induces the pronounced accumulation of bacteriolysins in the rabbit with an extraordinarily high binding power. The protective injections rendered the serum of the persons thus treated very active in respect to cultures derived from persons recovering from African typhoid. The doses were 1 loop, 2 loops and 3 loops at eight or ten-day intervals. During the first days after the injection the subject's blood becomes less bactericidal, but this negative phase is transient. It suggests, however, that it is wise to avoid contact with infection during this negative stage, as it is possible that the susceptibility is increased during this phase. Those of the German troops going to southwest Africa recently, who voluntarily submitted to these protective inoculations, were given two or three injections, a total of nearly 2,000 officers and privates. The agar tubes sown with the typhoid bacteria were kept in the incubator for twenty-four hours, and then an equal amount of physiologic salt solution was added. The whole was then heated to 60 C. (140 F.) for one hour, tested for sterility and .3 per cent. phenol added.

68. **Anesthesia Under Atmospheric Over-Pressure.**—Engelken gives illustrations of the improved pneumatic cabinet which he has devised for the purpose of keeping the patient's lungs filled with air under greater pressure than the surrounding air, and thus enabling the thorax to be opened without danger of the lungs collapsing. (See THE JOURNAL, page 1181 of the last volume.) The walls of the cabinet are of glass in an iron frame, and the head of the patient projects into the cabinet where the anesthetist sits. The floor of the cabinet is on a level with his waist, and a loose rubber "muff" fits around his waist and another around the neck of the patient to prevent ingress of air. A few clinical cases from Czerny's clinic are described, showing the ease with which extensive intrathoracal operations can be performed by this technic.

72. **Vital Statistics in Germany.**—Landsberger comments with surprise on the official statistics for 1896-99 compiled by the official sickness insurance bureau for the German empire. During this period disability pensions were granted to 300,000 policy holders, classified into 28 groups of maladies. Pulmonary affections were the cause of the invalidism in 35.9 per cent. of the pensioned men and in 20.9 per cent. of the women. It is surprising to find, however, that only 15 and 9.5 per cent. respectively of this proportion were due to tuberculosis, while 16.7 and 8.9 per cent. were attributed to "affections of the lungs exclusive of tuberculosis," and 3.7 and 2.2 per cent. to "affections of the air passages," and .5 to .3 per cent. to "affections of the pleura." The decline in the number of deaths from tuberculosis has been more than made up of late years by the increase in the non-tuberculous acute pulmonary affections. The fact that this increase is noticeable also in the invalidism from the chronic forms, Landsberger cites as a matter for surprise and comment.

Jahrbuch f. Kinderheilkunde, Berlin.

Last indexed page 585.

73 (LIX, No. 1.) Die Säuglings-Atrophie und die Paneth'schen Cellen. C. E. Bloch.

74 Ueber einen noch nie beschreibenen Fall von hochgradiger, congenitaler Erweiterung der Arteria pulmonalis in toto (dilatation). B. Zuber.

75 Ueber einen pseudo-diphtherischen Symptomkomplex bei Neugeborenen (in the newborn). A. P. Brecelj.
76 Zur Buttermilch-Ernährung und deren Indikation (buttermilk in infant feeding). H. Rensburg.
77 Ueber Milch gewinnung und Milchversorgung (milk supply and preservation). B. Sperk.
78 Action of Cooking on Albuminoids in Milk.—Wirkung des Kochens auf die Eiweissstoffe der Kuhmilch. R. Popper.
79 (No. 2.) *Local Treatment of Pressure Ulceration in Larynx.—Zur örtlichen Behandlung der Druckgeschwüre des Kehlkopfes. J. v. Bokay (Budapest).
80 Ueber den sog. Hikan (Xerosis conjunctivæ infantum ev. Keratomalacie). M. Mori (Berne).
81 Zur Behandlung der diphtherischen Stenosen. C. A. Thümer.
82 Zur Kenntnis der progressiven spinalen Muskel-Atrophie im frühen Kindesalter. G. v. Ritter.
83 *Zur Lehre von der Rachitis. F. Siegert.
84 (No. 3.) Zur Tetanie im Kindesalter (in children). C. Beck.
85 Ueber Darm-Gase bei Säuglingen mit Tympanites. R. Quest.

79. **Local Treatment of Pressure Ulceration in Larynx.**—Local applications are advocated by von Bokay in the form of a coating of gelatin and alum on a bronze tube. This prevents decubitus and promptly heals it if already established, as has been his experience in 16 cases. The bronze tube is made with a neck smaller than usual, and the medicated coating soothes and heals the lesion. This "healing tube" was inserted and left three days in place. The preceding ebonite tube had been worn for 93 to 294 hours. The patients were all under 7 years old. Secondary tracheotomy was avoided in all his cases.

83. **Rachitis and Breast Feeding.**—Siegert reviews a series of 2,152 children and states that among them rickets occurred almost exclusively in the artificially fed infants unless there was an inherited predisposition. Breast feeding is not an absolute protection against the affection, but it renders the children more resistant to its inroads.

Zeitschrift f. klinische Medicin, Berlin.

Last indexed page 333.

86 (LV, Naunyn Festchrift.) *Ueber renalpalpatorische Albuminurie und ihre Bedeutung für die Diagnose von Dystopien sowie von Tumoren im Abdomen. J. Schreiber (Königsberg).
87 Zur Pathogenese des Icterus. Minkowski.
88 Zur Lehre von der Akromegalie. E. Stadelmann.
89 Struma und Katarakt. A. Vossius.
90 Zur Klinik der Cholelithiasis. von Wild.
91 *Polyglobulie und Milztumor (enlarged spleen). W. Weintraud.
92 Pseudoleukämie und Tuberculose. H. Falkenheim. One case in small boy.
93 Zur Morphologie und Biologie der Tuberkel-Bacillen. E. Levy.
94 *Fever in Syphilitic Liver Affections.—Ueber Fieber bei Syphilis der Leber. F. Klemperer.
95 *Psychisches Trauma und progressive Paralyse. H. Kriege.
96 Experimental Study of Circulation in Lungs and of Mechanical Action of Pleural Effusions.—Exp. Beiträge zur Lehre vom Lungenkreislauf und von der mech. Wirkung pleuritische Ergüsse. D. Gerhardt.
97 Disturbances in Absorption of Fat and Their Relation to Elimination of Lime, Magnesia and Ammonia.—Ueber Störungen der Fettresorption und ihre Beziehung zur Ausscheidung von Kalk, Magnesia und Ammoniak. W. Schlesinger.
98 Ueber das Verhalten der stereoisomeren Methyl-Glykoside im gesunden und diabetischen menschlichen Organismus (behavior in health and in diabetes). S. Lang.
99 *Fever in Biliary Lithiasis.—Ueber das Fieber bei der Gallensteinkrankheit. H. Ehret.
100 *Banti's Disease and Metabolism Before and After Splenectomy.—Zur Pathogenese der Bantischen Krankheit, mit bes. Berücksichtigung des Stoffumsatzes vor und nach der Splenectomie. F. Umber (Altona).
101 *Operative Behandlung der otitischen Meningitis. P. Manasse (Strasburg).
102 *Ueber das gleichzeitige Vorkommen von manifester Syphilis und Tabes (simultaneous occurrence). C. Adrian.
103 *Ueber infectiöse Labyrinth-Erkrankungen. W. Kümmel (Strasburg).
104 *Trauma und Diabetes mellitus und Glykosurie. W. Kausch.
105 Multiple Sklerose und Diabetes mellitus. U. Rose.
106 Zur Kenntnis von Secretions-Anomalien der Niere (of kidney). A. Steyrer.
107 *Zur Hygiene und Therapie der Wüste (of the desert). H. Engel (Heluan, Egypt).
108 Die Remissionen der Dementia precox. K. Pfersdorff.
109 *Ueber intravitale Beeinflussung autolytischer Vorgänge im Körper (intravital influencing of autolytic processes). Heile (Breslau).
110 Fall von Dermographismus bei einem Icterischen. L. Bollack.
111 Thermodynamische Betrachtungen über die Reactionen zwischen Colloiden und über das Wesen der colloidalen Lösungen (essence of colloidal solutions). U. Friedemann.
112 Ueber Polyposis intestinalis. O. Funkenstein.
113 Ueber Albuminurie bei Scabies. H. Hübner (Leipsic).

86. **"Renal-Palpatory" Albuminuria.**—Schreiber has been investigating for several years the conditions under which albuminuria develops from compression of the kidney. This organ reacts with albuminuria to any decided interference with its circulation, but it subsides with the removal of the cause. Compression of the upper part of the thorax and direct palpation of the kidney are able to elicit this transient albuminuria. In 42 cases of wandering kidney examined, the displacement of the kidney was considerable in 29, and all of these patients showed marked albuminuria after direct palpation of the organ. The findings were also more or less positive in all the others, with a single exception. The proportion of albumin ranged from traces to 3 per 1,000 Esbach. The larger proportions were always in elderly persons. Indirect palpation of the kidney, through the liver, sometimes gave vaguely positive findings. The albuminuria was more pronounced the better the access to the front and rear surface of part of the kidney. Palpation and compression of the pole alone are enough for the purpose. The albuminuria thus induced differs from that of nephritis by its transient character and by the absence of casts. If it persists into the next day the presence of inflammation may be surmised. This "renal palpatory" albuminuria serves to differentiate a wandering kidney from an abdominal tumor as Schreiber shows by 6 convincing examples. The appearance of the albuminuria demonstrated that the tumor was the kidney and not the spleen, or a stone-filled gall bladder or a liver tumor. Six other cases are related to prove the great differential value of the results of direct palpation of the kidney by the absence of this transient albuminuria. Admixture of blood supplements the information thus derived in some cases. Schreiber proclaims that this "renal palpatory albuminuria" will undoubtedly render exploratory incision or catheterization of the ureters superfluous in many cases.

91. **"Polyglobulia with Enlarged Spleen."**—Weintraud thinks that the cases with enlarged spleen belong in a different category from those without, and consequently that Osler was right in classing his 3 cases of "chronic cyanosis with polycythemia and enlarged spleen" as a new clinical entity. Weintraud has observed 3 similar cases, which bring the total on record to 16. Only 6 of the patients were women. All were between 27 and 53 years of age. Malaria, alcohol and syphilis seem to play no part in the etiology. The subjective disturbances can be classed as those due to disturbances in the circulation of the brain and those resulting from the enlarging of the spleen. The first symptoms dated from six to ten years before in many of the cases. One of his patients had edema of the legs, with phlebitic processes and development of gout later, with general dropsy to which he succumbed. Years before the first symptoms of gout appeared, an excess of uric acid had been noted in the blood. The 2 other patients are still alive, and one seems to be benefited by venesection every six months, although the composition of the blood does not seem to be altered by it. His relief after a severe hemorrhage from the stomach was unmistakable. The third patient was apparently benefited for a time by a course of Marienbad waters, vegetable diet and restriction of fluids, but serious complications on the part of the heart supervened, calling for digitalis and diuretics. The spleen in this case has subsided to nearly normal size. Weintraud analyzes also the cases on record in which nearly the same clinical picture was presented, but without enlargement of the spleen, and theorizes to explain its etiology. It can not be ascribed to increased blood pressure, as this was approximately normal in his cases.

94. **Fever in Syphilitic Affections of Liver.**—Klemperer had occasion to observe 2 cases in the last few months in which the most prominent symptom was a protracted fever of a pronounced remittent and sometimes intermittent type, with chills. No signs of any lesions could be discovered, except a slight enlargement and tenderness of the liver, with traces of icterus. Both patients were promptly and permanently cured by tentative mercurial-iodid treatment. He reviews the literature on febrile lues of the viscera, and advocates specific treatment in all conditions of obscure origin in which the predominant symptom is a persisting hectic fever. The trouble may be a syphilitic affection of the liver, lungs or other organs.

95. **Psychic Trauma and Progressive Paralysis.**—Kriege describes a case and summarizes 2 from the literature in which a severe fright, an attack by bandits or an explosion, was fol-

lowed by the development of progressive paralysis. He is confident that an intense fright is able to induce vasomotor disturbances as severe as from a physical concussion of the brain. Syphilis and an inherited predisposition are not excluded in his own case.

99. **Fever in Biliary Lithiasis.**—Ehret's opinion in regard to fever is that it has nothing to do with irritation of the walls of the biliary passages or with reflex action. It is rather, he thinks, an index of the presence of an infection still unconquered by the defenses of the organism. The fatalities in his gallstone operations have always been in patients with high fever at the time of intervention. When the bile was found sterile at the operation, there was never post-operative fever, but whenever the bile contained quantities of germs, temperature was the rule. He thinks that gallstone operations should obey the same indications as appendicitis operations. The best time for them is in the prefebrile or the post-febrile stages.

100. **Banti's Disease and Splenectomy.**—Umber relates cases and presents arguments to show that true "splenogenic toxic anemia" is the only type of Banti's disease in which splenectomy is indicated. Study of the metabolism shows that the diseased spleen in these cases contains some element which is not only destructive to the blood, but has also a toxic influence on the metabolism. Removal of the spleen does away with this poisonous influence. He tabulates the results of chemical analysis of the urine in a case of this type, showing an abnormally increased destruction of albumin and periodical increased elimination of purin bodies on a purin-free diet. In an apparently similar clinical case the albumin and purin kept within normal limits, and there was no question of splenectomy after this was found out. The gradual spontaneous recovery of the patient confirmed the assumption that this case differed essentially from the first one by the absence of the spleen toxin.

101. **Operative Treatment of Otitic Meningitis.**—Manasse's 3 patients recovered from severe meningitis secondary to otitis, after mere evacuation of the focus in the bone in one case, after puncture of the meningeal sac at the primary site of the infection in the second, and after a similar puncture with incision of the dura in the third. All were in early stages. He believes in daily aspiration of cerebrospinal fluid in case the meningitic symptoms persist, with, eventually, incision of the dura and exposure of the pia mater.

102. **Simultaneous Syphilis and Tabes.**—Adrian tabulates the particulars of 16 cases of tabes with active manifestations of syphilis in the cerebrospinal system, also of 15 cases of active manifestations elsewhere than in the central nervous system —all of the above being anatomically established—and also of 65 cases in which during life there had been evidences of active constitutional syphilis accompanying tabes. In more than 12 per cent. of the cases the syphilitic infection had been ignored during life. Among the numerous conclusions deduced from this study is one to the effect that the prospects of treatment of the tabes are brighter when it is accompanied by these manifestations of florid syphilis, as they suggest an earlier and hence more curable stage.

103. **Infectious Labyrinthitis.**—Kümmel classifies the various symptoms noted in 12 cases and reviews 8 in detail, appending a diagram of the various disturbances and results of various tests in 2 typical cases.

104. **Trauma and Diabetes.**—Kausch is skeptic in regard to the possibility of traumatism as able to induce genuine chronic diabetes.

107. **The Desert as a Health Resort.**—Engel's experience seems to indicate that the summer climate of Egypt, especially in the desert, is particularly beneficial for cases of chronic and subacute nephritis with a vigorous constitution and not too much enfeebled heart.

109. **Intravital Influencing of Autolytic Processes.**—Heile's conclusions from his extensive research are to the effect that the body is constantly striving to eliminate injurious and damaged elements by means of its endocellular enzymes. The leucocytes are especially important as the conveyors of these enzymes. These efforts on the part of the body can be promoted from without under appropriate conditions. In iodoform treatment of tuberculous abscesses, for example, the leucocytes are attracted to the spot, and as they are destroyed, the enzymes are liberated which in turn dissolve the contents of the abscess and render it absorbable. Roentgen ray treatment also sets the enzymes free in the tissues, and by attracting the leucocytes to the spot, increases the quantity of enzymes there. The result is the breaking down and reabsorption of the normal or morbid tissue.

Grèce Médicale, Syra, Greece.

Last indexed page 667.

114 (V, No. 23.) Successful Tendon Transplantation Paralytic Pes Equinus.—Guérison d'un pied-bot équin paralytique par transplantation tendineuse. J. G. Chrysospathes.
115 (No. 24.) *Observations cliniques sur 11 reductions de luxation congénitale de l'articulation coxo-fémorale. Id.
116 (VI, No. 1.) Discussion of Operative Treatment of Abscess of Liver.—Traitement chirurgical le plus convenable des abcès et des kystes hydatiques du foie. Kateriopoulos and Petridis.
117 (No. 2.) *Les dernières recherches sur la resistance de l'organisme. La prédisposition et l'immunité. S. Zografidi (Athens).
118 Discussion of Operative Treatment of Hernia.—Des résultats du traitement op. des hernies (notamment de la hernie inguinale), pour arriver à leur guérison complète. Kallontzis and others.
119 (No. 3.) *Relations Between Malaria and Cancer.—Quel est le rapport du paludisme avec les tumeurs malignes. J. Cardamatis (Athens).
120 *Quelques observations sur les procidences cachées du cordon ombilical (hidden prolapse of the cord). M. N. Ca-I-Ris.
121 (No. 4.) Discussion of Relations Between Malaria and Female Genital Sphere.—Des rapports qui existent entre le paludisme, la grossesse, l'accouchement, la puerpéralité et vice versa. Cardamatis (Athens), Tsakyroglous (Smyrna), and others.
122 (No. 6.) *Influence of Climate and Atmospheric Changes on Development, Progress and Treatment of Affections of Pharynx, Tonsils, Larynx, Trachea, Bronchia, Nose and Ears.—Influence du climat, etc. M. Mangakis (Athens).
123 *Discussion of Technic of Administration of Quinin in Malaria. Kotrosos (Macedonia), Economou (Sparta), and others.
124 *Oil in Typhoid.—Gneftos (Alexandria).

115. **Congenital Dislocation of the Hip.**—Chrysospathis comments on the predominance of the left side and of the female sex in his experience. He treats the dislocation by a modification of Lorenz' method, as he describes in detail, and has had no recurrence in his 11 cases thus treated.

117. **Predisposition and Immunity.**—Zografidi concludes from his study of the literature on this subject and his own personal observation that the human race can be made and kept healthy in a not very distant future. A healthy heredity, an ideal hygiene, serotherapy and a very few drugs—these are all that is necessary to insure a healthy race, and his idea is that all are attainable if the race so wills it.

119. **Malaria and Cancer.**—Cardamatis has frequently encountered cancer associated with malaria, and denies that there is any real antagonism between them. But at the same time he states that the mortality records show that cancer is less prevalent in the regions in Greece where malaria is endemic and severe, while it is more frequent in the regions free from malaria or only slightly affected by it. He has witnessed the development of malaria in a woman with an operable cancer, after she has been bitten by infected mosquitoes.

120. **"Hidden" Prolapse of the Cord.**—Ca-I-Ris warns that the fetus may be asphyxiated by prolapse of the cord when such prolapse entirely escapes our notice and means of investigation. When the fetal heart beat drops from 120 to 100 or 80 something of the kind should be suspected and delivery hastened.

122. **Atmospheric Changes and Respiratory Affections.**—Mangakis has been studying this subject for five years, and has compiled some instructive tables with his 1,229 patients. The majority were young soldiers, living under the same conditions, and consequently well adapted for this comparative research. His conclusions are the same as those in the textbooks in regard to the favoring of respiratory and aural affections by chilly, damp, gray weather with wind. He does not accept these factors as producing the affections. They merely predispose to them by reducing the resisting powers of the organism. Microbian association is indispensable in most cases.

123. **Quinin in Malaria.**—Economou of Sparta has found that preliminary administration of sodium bicarbonate materially

enhances the action of quinin in malaria. In 25 out of 27 cases of continuous malarial fever, the fever was arrested within forty-eight hours by this combination. He believes that the blood is less alkaline than normal in case of malarial infection.

124. **Oil in Typhoid.**—Gneftos tries to prevent absorption of the typhoid toxins through the walls of the intestines. He strives to accomplish this by coating the lining of the intestines with oil. He gives small repeated doses of some concentrated solution of oil, almond oil, for instance, a teaspoonful every two hours. He has not had a death in 60 cases since he has adopted this technic. The fever subsides a little by the second or third day and the nervous symptoms soon abate. By the end of the second week convalescence is well established.

Riforma Medica, Naples and Palermo.

Last indexed page 1234.

125 (XXI, No. 8, February 25.) *Caso di setticemia diplococcica. E. Tedeschi.
126 Pneumonic Paralysis.—Di un'emiplegia in pneumonico. C. Fedili. (Commenced in No. 7.)
127 Omentopexy.—Lintervento chirurgico nelle cirrosi del fegato con ascite. O. Cignozzi. (Commenced in No. 6.) See abstract page 1234.
128 *Cultivation of Anaërobic Germs.—Sulla biologa di alcuni germi anaërobici e su di un facile mezzo di cultura dei medesimi. G. Tarozzi. (Commenced in No. 6.)
129 *Influence of Saline Waters on Gastric Secretions.—Influenza delle soluzioni clorurato-sodiche naturali ipotoniche sulla secrezion dello stomaco. P. Casciani.
130 *Studio sull azione della stricnina come cardiocinetico (heart tonic). C. Gennari.
131 *Diagnostic Significance of Propagation of Heart Sounds.—La propagazione dei rumori e relativi criteri cariodiagnostici. G. Cattani.
132 (No. 10.) Antibacillary Serum in Tuberculosis.—Ricerche sperimentali sul valore immunizzante e curativo del siero antibacillare. Figari and Marzagalli.
133 Contributo allo studio della malattia di Dercum. G. Norsa.
134 (No. 11.) *Ulteriori ricerche sulla sieroterapia antisifilitica. A. Risso and A. Cipollina.
135 Sulla pretesa esaltazione di virulenza del bacillo di Eberth (increased virulence). C. P. Goggia.
136 (No. 12.) *Value of Intestinal Putrefaction.—Sul valore della putrefazione intestinale. A. Rovighi (Bologna).
137 *Sulla tabe giovanile. A. Gianelli (Rome).
138 Specific Changes That Occur in Blood Serum After Injection of Sputa of Different Kinds.—Sui cambiamenti specifica che avvengono nel siero sanguino in seguito ad iniezioni di sputi di varia natura. C. Quadrone (Turin).

125. **Diplococcic Septicemia.**—Tedeschi's patient was a young woman, previously healthy, who was taken with sore throat, headache and pains in the joints with fever. As these symptoms improved in the course of four or five days, others developed showing inflammation and effusion in the pleura and peritoneum. The temperature was scarcely above normal, the effusions were soon reabsorbed and the patient dismissed in symptomatic good health, but Fraenkel's diplococcus was found in the blood and in the effusions and also in the throat.

128. **Anaerobic Cultures.**—Tarozzi reports extensive research on anaerobic germs by an improved method of cultivating them. This consists in the addition of a piece of fresh animal tissue to broth, agar or other ordinary culture medium. Scraps of the parenchymatous organs or lymphatic glands are the best for the purpose. Germs with a terminal spore grow readily under these conditions, and he communicates several new facts in regard to their biology learned by this technic.

129. **Action of Saline Mineral Waters on the Gastric Secretion.**—Casciani has charge of the course of medical hydrology and balneotherapy of the Rome medical school. He here describes comparative tests of various mineral waters. The results indicate that natural, hypotonic, saline mineral waters augment the secretion of gastric juice and of hydrochloric acid.

130. **Action of Strychnin on the Heart.**—Gennari's conclusions from his clinical experiences and research are to the effect that strychnin does not act directly on the heart. Its action is exerted on the nervous system, inducing vasoconstriction with increased blood pressure. It is indicated in cases of heart trouble and neurasthenia with depressed vitality and lessened elasticity of the vessel walls. He has frequently found that it produced great subjective improvement with increased strength and appetite. He gives about 5 mgm. a day for ten days as the maximum dosage, bearing in mind the cumulative action of the drug. He relates a number of instructive examples of its use in various heart affections.

131. **Propagation of Heart Sounds and Its Diagnostic Value.**—Cattani has evolved a system of diagnosing by study of the propagation of the sounds of the heart. The sounds are propagated differently according to the site, shape, extent, height and density of the pericardial effusion. These differences in the propagation are enumerated and their significance explained.

134. **Later Experiences with Antisyphilitic Serum Treatment.** Continuing the experiences previously mentioned in these columns Risso and Cippollina report still more favorable results in a later series of cases. In 6 cases of secondary, in 2 of tertiary and in 5 of parasyphilitic manifestations of syphilis the lesions were more severe than any in the first series, but the success of the serum treatment was even more striking. As already mentioned, the serum is obtained by repeated injection of dogs with blood from syphilitics in the midst of the secondary phase. Small amounts of the blood corpuscles from the same animals are added to the serum on the assumption that the immunizing power is a property that is inherent in the histologic elements of the blood as well as in the serum. Two of the first series of patients present evidences of partial recurrence of secondary lesions. The others have been free from any manifestations to date, with the exception of one patient who has been lost to sight.

136. **Intestinal Putrefaction.**—Rovighi reviews the results of extensive research on this question. Among the points brought out is the remarkable influence of a milk diet in reducing intestinal putrefaction. Kefir in certain cases had a still more powerful influence in this respect.

137. **Juvenile Tabes.**—Giannelli's communication describes the case of a girl of 17, a virgin, in fairly good health, free from any signs of inherited or acquired syphilis. She was staying at the seashore and went in bathing during a menstrual period. She experienced at the time what she described as an "intense emotion," and the next day she had pains in all her joints. The pains gradually subsided in the course of five or six days. Three months later she experienced lancinating pains, with violent, unilateral headache. They recurred at intervals with progressive frequency, until at 22 she presented the typical syndrome of juvenile tabes. Gianelli reviews the literature on the subject, remarking that a number of the 40 cases on record belong in the category of Friedreich's atony, others are due to a symptom complex resulting from a specific meningitis, and only a very few present the typical picture of pure tabes.

Books Received

Acknowledgment of all books received will be made in this column and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made for review, as dictated by their merits, or in the interests of our readers.

DENTAL SURGERY FOR MEDICAL PRACTITIONERS and Students of Medicine. By A. W. Barrett, M.B., M.R., M.R.C.S., London. Fourth Edition, with Illustrations. Cloth. Pp. 159. Price, $1.50 net. Philadelphia: P. Blakiston's Son & Co. 1905.

ABDOMINAL PAIN. Its Causes and Clinical Significance. By A. Ernest Maylard, M.B., B.S., London. Cloth. Pp. 304. Price, $2.50 net. Philadelphia: P. Blakiston's Son & Co. 1905.

ST. PETER STATE HOSPITAL, Biennial Report of the Superintendent for the Year Ending July 31, 1904. Paper. Pp. 22. St. Paul, Minn.: McGill-Warner Co. 1904.

EIGHTH ANNUAL REPORT of the Loomis Sanatorium and Annex for the Treatment of Tuberculosis. Paper. Pp. 52. Liberty, New York: 1904.

REPORT OF THE WISCONSIN STATE TUBERCULOSIS COMMISSION. Paper. Pp. 43. Madison, Wis.: Democrat Publishing Co., State Printer. 1905.

REPORT OF THE COMMISSIONER OF EDUCATION for the Year 1903. Vol. I. Cloth. Pp. 1216. Washington: Government Printing Office. 1905.

SEVENTEENTH ANNUAL REPORT of St. Margaret's Hospital of Kansas City, Kansas, for the Year 1903 and 1904. Paper. Pp. 24.

TWENTIETH ANNUAL REPORT of the Adirondack Cottage Sanitarium. Paper. Pp. 16. Saranac Lake, N. Y.: November, 1904.

TRANSACTIONS OF THE VERMONT STATE MEDICAL SOCIETY for the Year 1904. Cloth. Pp. 239. Rutland: The Tuttle Co. 1905.

MONTHLY CONSULAR REPORTS. March, 1905. Paper. Pp. 272. Washington: Government Printing Office. 1905.